A STUDY OF DIVISION TWO SOCIAL STUDIES READING SKILLS

by

George Robert Hislop
Division of Elementary Education

1959

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A STUDY OF DIVISION TWO SOCIAL STUDIES READING SKILLS

A Thesis

Presented to

the Faculty of the Graduate School

University of Alberta

In Partial Fulfillment

of the Requirements for the Degree of

Master of Education

by

George Robert Hislop

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FACULTY OF GRADUATE STUDIES

The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "A Study of Division II Social Studies Reading Skills" submitted by George Robert Hislop in partial fulfilment of the requirements for the degree of Master of Education.

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CHAPTER I

DEFINITION OF THE PROBLEM

I THE PROBLEM

This study will investigate, by the interview technique, the use of social studies reading skills by division two pupils. It will compare groups of high and low achievers from experimental classes, where teaching methods designed to give intensive training along problem-solving lines have been used, with groups of high and low achievers from control classes. Thus, the effect of a program of intensive training along problem-solving lines on the use of social studies reading skills will be explored. In addition, the study will evaluate the transfer of the improvement in the use of social studies reading skills on social studies problems to the use of these skills on reading problems of a social studies type without guiding questions.

II BACKGROUND OF THE PROBLEM

For many years the curriculum guides have emphasized the importance of developing skills and abilities, and during the past few decades, the development of reading and problem-solving skills has been emphasized. The Alberta Elementary Bulletin Two[1] lists ten important skills and abilities, of which three are:

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[1] Bulletin 2 Program of Studies for the Elementary School, Department of Education, Edmonton, Alberta, p. 11.

1. The ability to read for one's own pleasure and to obtain needed information.
2. The ability to find, organize, and use information.
3. The ability to solve problems of a social studies and scientific nature.

These three are general abilities which would probably require the use of reading skills. If these abilities are to be effectively developed at any chosen level of pupil development, there is need for insight into the development of reading skills. Greater understanding of the use of reading skills for problem-solving by pupils of this level is needed. Also, there is need for information concerning the effects of intensive training upon the development of these skills and the transfer of improvement in their use from the subject where intensive training has been given to a related subject where they may be used.

An examination of authoritative writings and research dealing with the use of reading skills coupled with further experimentation with children should reveal some valuable information, and lead to the formulation of a list of reading skills that should be developed for any specific purpose. Not too long ago, reading was considered to be a single skill but now as Russell states;

> Most teachers realize now that an intermediate or senior pupil does not possess a general skill in reading; actually he possesses a number of different skills, and as he reaches higher grades he needs more and more of these specialized skills.[2]

Then Russell lists nine "special types of reading in the social studies which require specific guidance by the teacher"[3]:

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[2]David B. Russell, Children Learn to Read. Toronto: Ginn and Company, 1949, p. 237.

[3]Ibid, p. 237.

a) Ability to locate information--in reference books and other social studies sources
b) Ability to read several kinds of maps
c) Ability to select the main topic and supporting details of a selection
d) Ability to take notes from one's reading
e) Ability to summarize
f) Ability to see connections between a series of related events
g) Ability to discriminate between relevant and irrelevant material
h) Ability to recognize the difference between facts and opinion
i) Ability to help plan a report to a larger group[4]

These nine skills, which according to Russell, are needed by pupils in elementary and secondary schools, may be called social studies reading skills. The development of these social studies reading skills should contribute to the development of the three general abilities listed previously from the Alberta Elementary School Bulletin.

Moreover, Fay has stated that effective study depends on reading ability, and he has listed as study skills the student's use of himself, his general reading ability, his ability to read and think effectively in the various content areas, and his skill in the use of the materials.[5] In the same article Fay has listed many reading skills which are needed in the social studies field, and so these skills, together with the nine previously mentioned by Russell, might form the basis for a list of social studies reading skills.

To supplement the existing information it seemed desirable to experiment with a group of children to find out the social studies read-

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[4]Ibid, p. 237.

[5]Leo Fay, "How Can We Develop Study Skills for the Different Curriculum Areas?" The Reading Teacher March 1953, Volume VI No. 4.

ing skills they actually use, and to study the use of these skills. Also, the effects of a program of intensive training upon the development of these skills should be investigated. At the present time, the University of Alberta has a study under way involving some six hundred pupils in experimental and control classrooms. Since the University study is designed to find out how pupils at the division two level use problem-solving skills, as well as to develop teaching methods that will improve the use of these skills, it seemed profitable to investigate the use of social studies reading skills using pupils from this larger University study. The University study is emphasizing the development of study skills through the use of problem-solving in the language-arts and social studies areas. Moreover, it has been recognized, generally, that effective study depends on reading ability. Therefore, an investigation into the effects of training in study skills on the development of social studies reading skills can be carried out using pupils from the University study.

This smaller investigation obtained and analyzed oral responses to various types of social studies reading problems, and thus obtained additional information on social studies reading skills. Also, it investigated the effects of the intensive training in problem-solving upon the use of social studies reading skills. Thus, it was hoped that it would serve as a pilot study for further research that the University may conduct on a larger scale.

The University study is using the S.T.E.P. tests of social studies and reading to test division two pupils before and after the period of

intensive training in the use of study skills. These are quantitative tests which reveal, by the scores, the number of correct answers that a pupil can score before and after the training period. However, it seemed that additional information may be obtained from the smaller investigation through an attempt to measure the change in the use of the social studies reading skills as shown by oral responses to social studies problems, and through an attempt to measure any transfer of improvement in the use of these skills to the reading of problems of a social studies type.

To find out how pupils use these skills the interview technique used by Bloom and Broder[6] and several others, has certain advantages, as it permits the interviewer to observe the pupil in the process of solving a problem. This technique has been used effectively with senior students and probably could be used at the division two level. Bloom and Broder recorded data by note-taking, or, with a very small number of students by wire-recorder. Since it seemed desirable to select fifty or sixty pupils from those in the University study, the note-taking method of the interview technique was chosen. It was anticipated that an analysis of the verbalized responses obtained from the interviews would provide some insights into the reading and thinking processes of division two pupils.

III HYPOTHESES

1. That, at the beginning of the study, the groups of high and low achievers from the experimental schools will not show a significant

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[6]B. S. Bloom & L. J. Broder: Problem-solving Processes of 60 Students. The University of Chicago Press, Chicago: 1950.

difference from the groups of high and low achievers from the control schools in:

a) the use of reading study skills as shown by the S.T.E.P. test of social studies

b) verbalized responses to certain problems from the S.T.E.P. test of social studies

c) verbalized responses to problems with guiding questions

d) verbalized responses to problems without guiding questions.

2. That the groups of high and low achievers from the experimental schools will show a greater improvement than the groups of high and low achievers from the control schools in the use of social studies reading skills, as shown by the results of the S.T.E.P. test of social studies

3. That the groups of high and low achievers from the experimental schools will also show a greater improvement in the following ways:

a) verbalized responses to problems from the S.T.E.P. test of social studies, and

b) verbalized responses to social studies reading problems with guiding questions

4. That there will be a transfer of the improvement in the ability to use social studies reading skills to problems of a social studies reading type without guiding questions so that the groups of high and low achievers from the experimental schools will show a greater ability to solve such problems than the groups of high and low achievers from the control schools. This improvement will be shown by their verbalized responses to a problem of this type.

IV DEFINITION OF TERMS

Social studies reading skills. Social studies reading skills are those skills that are necessary for solving a written social studies problem including skills in reading and interpreting written social studies material, in locating information and using information to solve a social studies problem.

A social studies reading problem. A social studies reading problem is a problem involving the interpretation of written material and this may include diagrams, graphs, charts, tables and pictures with captions.

A reading problem of the social studies type. A reading problem of the social studies type is a problem with a non-social studies theme, but expressed in similar written forms, and so requiring the same reading skills as a social studies reading problem.

Verbalized responses. Verbalized responses are oral responses to written problems which the pupils will read. The responses will be recorded by the interviewers, all using the same procedures.

V ASSUMPTIONS

The following are the assumptions for this study:

1. That the S.T.E.P. test of social studies is a valid measure of social studies reading skills.

2. That the social studies problems with and without guiding questions used in the interviews are valid as a measure of social studies reading skills.

3. That the division two pupils were able to verbalize reasons for their answers on the S.T.E.P. test of social studies, on social studies reading problems with guiding questions, and on problems of a social studies type without guiding questions.

4. That an analysis of the verbalized reasons of the division two pupils, for their answers to the social studies problems, revealed their ability to use social studies reading skills.

5. That an analysis of the verbalized reasons of these pupils for their answers to the social studies problems yielded valuable insight into the students' methods of solving problems.

VI PLAN OF PROCEDURE

1. A survey of the literature that has significance for this study was made.

2. The S.T.E.P. tests of reading and of social studies were given to all eighteen classes of grades four, five, and six taking part in the University of Alberta experimental study. For the purposes of this smaller study, there was a selection on the basis of the S.T.E.P. test of reading at each grade level, of five high and five low achievers from the experimental classes, and five high and five low achievers from the control classes of the University of Alberta study. Thus, there were selected twenty pupils from each of grades four, five, and six, or, a total of sixty pupils.

3. A few days after the students were tested with the S.T.E.P. tests of social studies and reading, they were interviewed individually.

During the interview each pupil was asked to verbalize reasons for his answers to about twenty-seven questions from the form of the S.T.E.P. social studies test with which he had been tested, and to two social studies problems with guiding questions, and to one reading problem of the social studies type without guiding questions. The verbalized responses to the problems were recorded on foolscap by an interviewer. Approximately six interviewers were needed to conduct the interviews and all six used the same method. For each individual interview, the interviewer gained the pupil's confidence before beginning the interview, and did not direct the pupil's thinking during the interview.

4. To analyze the pupil's verbalized reasonings, obtained from the interviews, a check-list was developed based on the related studies with additional categories if the verbalized reasonings made them necessary.

5. Using appropriate statistical techniques a comparison was made of the high and low achievers, at each grade level, from the experimental classes with the high and low achievers from the control classes on the basis of:

a) the use of reading study skills as shown by the scores on the S.T.E.P. test of social studies

b) verbalized responses to problems selected from the S.T.E.P. test of social studies

c) verbalized responses to the problems with guiding questions

d) verbalized responses to the problem without guiding questions.

6. At the completion of the University of Alberta experimental study, the beginning of June, all the students in the eighteen experi-

mental and control classes were tested again with the S.T.E.P. test of social studies using the form (4A or 4B) which they had not used before. The interviews were conducted as at the beginning of this smaller study with the appropriate form of the S.T.E.P. social studies test, and with problems equivalent to those used in the first interviews.

7. The difference in performance at the beginning and at the end of the study, of the high and the low achievers at each grade level from the experimental classes was compared with the difference in performance, at the beginning and at the end of the study, of the high and the low achievers at each grade level from the control classes on the basis of:

a) the use of reading study skills as shown by the scores on the S.T.E.P. test of social studies

b) verbalized responses to problems selected from the S.T.E.P. test of social studies

c) verbalized responses to the problems with guiding questions

d) verbalized responses to the problem without guiding questions.

8. The results were summarized and the conclusions were drawn up.

VII SIGNIFICANCE OF THE STUDY

This study was a phase of a larger experimental study undertaken by the University of Alberta. The larger University study is aimed at improving methods of instruction in the language-arts field, particularly along problem-solving lines. Hence, improved methods of teaching social studies reading skills should result. To assist the larger University study this smaller study investigated, by the interview technique, the

reasons a selected group of pupils gave for their answers to social studies problems and to a reading problem of the social studies type. Thus, the results of this smaller study should be significant in the following ways:

a) Since social studies reading skills are included among the problem-solving skills, this study investigated, in this area of problem-solving, the effectiveness of the teaching methods developed by the University study, as shown by the use of social studies reading skills by the pupils selected from the University study.

b) As the performance of the experimental groups was compared to the performance of the control groups this study yielded valuable information about the extent to which social studies reading skills can be acquired.

c) As the transfer of the ability to use social studies reading skills from material with guiding questions to material without guiding questions was investigated, this study estimated the extent to which intensive training in the use of these skills assisted students in the content and related subjects where these skills can be applied. Further inferences may be drawn regarding the effectiveness of intensive training in social studies reading skills aimed at giving students more interest in scholastic studies and a greater desire to make the best possible use of their educational opportunities.

d) As this study considered the verbalized reasons for answers to problems, rather than the number of correct answers, this study produced information about the quality of reasoning of the pupils, or

the extent to which they answer problems by the use of these skills rather than by guessing or similar means.

e) The use of the interview technique supplied valuable information about the effectiveness of this type of investigation with pupils of grades four, five, and six, an age group with which this technique has seldom been used.

f) A check-list for analyzing the verbalized responses was developed and this should be useful to teachers who are particularly interested in developing social studies reading skills.

CHAPTER II

BACKGROUND OF THE PROBLEM

Much has been written about the importance of reading skills and the development of them. However, most of the research dealing with reading skills appears to have been carried out with senior students.

This chapter will discuss briefly some writings and research that provide a background of information helpful to an investigation into the use of social studies reading skills at the division two level.

I THE NEED FOR INFORMATION REGARDING THE USE AND DEVELOPMENT OF SOCIAL STUDIES READING SKILLS

For many years the curriculum guides have emphasized the importance of developing skills and abilities, and, during the past few decades, the importance of developing skills and abilities used in problem-solving. The reading skills are listed among the important skills to be developed. For most types of problem-solving they are essential. The Alberta Elementary School Bulletin Two lists ten important skills and abilities, of which three are:

1. The ability to read for one's own pleasure and to obtain needed information
2. The ability to find, organize and use information
3. The ability to solve problems of a social and scientific nature[1]

These three are general abilities which would probably require the

---

[1] Bulletin 2 Program of Studies for the Elementary School, Department of Education, Edmonton, Alberta, p. 11.

use of reading skills. Consequently, if these abilities are to be effectively developed at any chosen level of pupil progress there is need for insight into the development and use of appropriate reading skills.

Then, a knowledge of the reading skills that are most useful at this level is needed. Moreover, the ways these pupils use reading skills in problem-solving should be understood. Buswell stressed that teachers should teach children to read critically, should try to understand what the student thinks as he solves a problem, and should be more concerned with methods of thinking than with answers.[2] Also, the effect of a program of intensive training upon the development of these reading skills should be known. Finally, information is needed considering the possibility of the transfer of reading ability from the subject area where intensive training has been given to a related subject area where the ability may be used.

An examination of existing writings and research yielded some of the needed information, but more research dealing with reading skills is needed at the division two level. Since there are many reading skills, it was necessary to choose for the purposes of this investigation, those that are useful in problem-solving and in study or work-type reading. The social studies reading skills seemed to be suitable.

II SOCIAL STUDIES READING SKILLS THAT MAY BE NEEDED AT THE DIVISION TWO LEVEL

The writings of Russell and Fay and investigations by Leggitt and

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[2] G. T. Buswell, Patterns of Thinking in Solving Problems. University of California Press, Berkley, 1956, p. 91.

Anderson suggested the importance of many reading skills, some of which were found to be social studies reading skills useful at the division two level.

Russell stated;

> Most teachers realize now that an intermediate or senior pupil does not possess a general skill in reading; actually he possesses a number of different skills, and as he reaches higher grades he needs more and more of these specialized skills.[3]

Then Russell listed nine "special types of reading in the social studies which require specific guidance by the teacher"[4]:

a) Ability to locate information--in reference books and other social studies sources
b) Ability to read several kinds of maps
c) Ability to select the main topic and supporting details of a selection
d) Ability to take notes from one's reading
e) Ability to summarize
f) Ability to see connections between a series of related events
g) Ability to discriminate between relevant and irrelevant material
h) Ability to recognize the difference between facts and opinion
i) Ability to help plan a report to a larger group[5]

Fay has written an article on developing reading skills for the various curriculum areas.[6] In this article skills in reading, in reacting, in organizing, in retaining and in using materials may be found. The term reading ability was used by Fay to mean the ability to follow the author's thinking using various clues such as key sentences, paragraphing, and format clues. Similarly, reacting meant looking for

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[3]David B. Russell, Children Learn to Read. Toronto: Ginn & Co., 1949, p. 237.

[4]Ibid, p. 237.

[5]Ibid, p. 237.

[6]Leo Fay, "How Can We Develop Reading Study Skills for the Different Curriculum Areas?" The Reading Teacher March 1953, Vol. VI No. 4.

assumptions, supporting evidence, and relevant information. Organizing included summarizing ideas, arranging directions in sequence, outlining, classifying into categories, selecting and noting relevant information and making graphical representations. Retention was said to depend on clear understanding and a feeling of need for the information. The use of materials included ability to use the dictionary, skill in handling books, skill in the use of the library, and the ability to use summaries and graphic devices.

At the grade nine level, Dorothy Leggitt conducted an experiment in developing working skills in civics. Leggitt's experiment was concerned with the development of skills in: becoming informed about a new book, the use of general reference books, the reading of newspapers, the interpretation of a diagram or chart, the interpretation of a picture-graph, the interpretation of a table of statistics, summarizing, and outlining.[7] Leggitt called them skills in the study of the social sciences. They are needed for reading social studies materials and may be called social studies reading skills.

Anderson conducted a factorial analysis of reading using students from the secondary schools of Scotland.[8] The suggestion is made in the report of this research that important words are the fundaments of a sentence and that children learn relationships, or sentence structure, by understanding these words and how they are used. Presumably, then,

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[7]Dorothy Leggitt, "Measuring Progress in Working Skills in Ninth-Grade Civics," School Review, Vol. 42, pp. 676-687, Nov., 1934.

[8]C. C. Anderson, "A Factorial Analysis of Reading," Br. J. Educ. Psychology, Vol. 19-20, 1949-50, pp. 220-221.

children grasp ideas by understanding key words. Hence, the ability to understand key words must be an important social studies reading skill.

An analysis of the curriculum guides, the writings by Russell and Fay, and the research by Leggitt and Anderson provided a number of social studies reading skills and suggested the importance of developing them. However, at the division two level, there appeared to be very little evidence of research dealing with these skills. Actual experimentation with division two pupils revealed that some of the above skills are used at this level, and that there are other social studies reading skills in which training is needed.

III SOCIAL STUDIES READING SKILLS AND THE DEVELOPMENT OF STUDY SKILLS AND PROBLEM-SOLVING ABILITY

If division two pupils were enabled to develop better social studies reading skills they should be able to study more efficiently and to solve social studies problems and problems of a similar nature more effectively. There are the writings and research of experts to show the close relationship between reading ability and study, and reading ability and problem-solving.

Hall Bartlett has been quoted by Kathleen Brady Rudolf as stating that "effective study is largely a matter of effective reading;"[9] Fay has written that effective study depends on reading ability;[10] and Yoakam has

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[9]Kathleen Brady Rudolf, "The Effect of Reading Instruction on Achievement in Eighth Grade Social Studies" Contributions to Education 945, Bureau of Publications, Teachers College, Columbia University, New York, 1949, p. 5.

[10]Leo Fay, Op. cit.

written an article on the relation between reading and the subject fields.[11] In this article Yoakam referred to reading as a tool by which the printed matter in the curriculum fields is made available for use. Unless the pupil can read the material of the curriculum fields the material cannot convey information to the learner. Among the reading skills that he said the pupil needs, are the basic reading skills, including recognition and comprehension, complex reading skills for the curriculum areas including skills in location and organization of information, and also special reading skills for individual subjects. He stated "the child has not been taught to read until he can effectively use reading as a tool in any curriculum field in which it is depended upon as a medium of learning.[12]

Bloom and Broder, and Buswell have conducted investigations in problem-solving and Russell referred to their research and others in his book, Children's Thinking. Russell stated that the various hypotheses of experts "suggest that problem-solving is not a unitary factor but is rather a complex of a number of abilities."[13] He added that this has not been fully established by research. However, he believed that to solve problems in school work regardless of subject the pupil should be able to understand the situation, perceive relationships, draw from related experiences, and reorganize the materials.[14]

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[11]Gerald A. Yoakam, "Essential Relationships Between Reading and the Subject Fields or Areas of the Curriculum," J. Educ. Res., Vol. 38, pp. 462-469.

[12]Ibid, p. 467.

[13]David H. Russell, Children's Thinking. Toronto: Ginn & Co., 1956, p. 269.

[14]Ibid, p. 269.

Bloom and Broder investigated the problem-solving processes of college students by having them think aloud as they solved problems. They found that successful and non-successful students differed in their ability to use four general skills.[15] These skills are somewhat similar to the problem-solving skills listed by Russell. The successful students were superior in their understanding of the nature of the problem in that they could use key words, break statements into lesser parts, read and comprehend directions and understand the requirements of the problem. They were more successful in understanding the ideas contained in a problem and in using the relevant knowledge at their command. Successful students were superior in their ability to simplify and reorganize material in a problem, and were able to follow through a line of reasoning.

Thus Buswell, Russell, and Bloom and Broder indicated the importance of reading skills for problem-solving and the need for more insight into problem-solving processes. Since most of the existing research into problem-solving has been carried out at senior levels, there is a definite need for insight into the use of reading skills and the problem-solving processes at the division two level.

IV THE EFFECTS OF A PROGRAM OF INTENSIVE TRAINING UPON THE DEVELOPMENT OF SOCIAL STUDIES READING SKILLS

In the report of his investigation into the problem-solving processes of high school and college students, Buswell has stated:

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[15]B. S. Bloom & L. J. Broder, Problem-Solving Processes of College Students. Chicago: The University of Chicago Press, 1950, pp. 25-32.

> To whatever extent problem-solving is affected by the recognition of relevant, irrelevant and needed data, by the practice of estimating answers in advance, by the use of an effective sequence of operations, and by the ability to think with both numbers and letter symbols it is evident that some people have a great advantage over others. These are learned factors and to a considerable degree they reflect the habits and practices that have resulted from instruction in the schools.[16]

This statement stresses the importance of training in reading and study skills.

Leggitt's experiment has shown that systematic practice periods will develop these skills. The experimental group were given eighteen weeks of purposeful practice and were able to increase their initial ability by about 50%.[17] Meanwhile, the control group, with equally experienced teachers, but "each pupil left to study in his usual trial and error manner"[18] made approximately no progress in developing these skills. However, Leggitt experimented with grade nine students. It seemed desirable to know more about the development of social studies reading skills at the division two level.

At the present time the University of Alberta has a study underway emphasizing the development of study skills through the use of problem-solving in the language-arts and social studies areas. Since it has been recognized that effective study and intelligent problem-solving depend on reading ability, it was possible to conduct an investigation into the effect of training in problem-solving and study skills on the

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[16] G. T. Buswell, Op. Cit., p. 91.

[17] Dorothy Leggitt, Op. Cit., p. 686.

[18] Ibid, p. 677

development of social studies reading skills, using pupils from the University study.

V THE POSSIBILITY OF TRANSFER OF READING ABILITY FROM THE SOCIAL STUDIES AREA TO RELATED AREAS

Most of the investigations and discussions dealing with the transfer of reading skills from one subject to another have been concerned with senior students. Nevertheless, Artley's statement that reading comprehension is composed of both general and specific factors[19] was of interest. In a study with secondary students, Artley found that there is evidence of a high degree of specificity in the factors relating to comprehension in the social studies but "in general, ability to read a material of a general informative type is associated with ability to read a type of material more specifically related to the social studies area."[20] Also, Artley included as an educational implication that "the teacher invested with the responsibility of caring for the reading needs of the pupils in the secondary school can make a material contribution toward giving a type of training that will operate in a functional manner in the social studies"[21] and "the social studies teacher who develops effectively the skills essential to adequate comprehension in his area probably will note a general improvement in other

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[19]A. S. Artley, "The Appraisal of Reading Comprehension," Journal of Educational Psychology, Vol. 34, January 1943, p. 57.

[20]A. S. Artley, "A Study of Certain Relationships Existing Between General Reading Comprehension and Reading Comprehension in a Specific Subject Matter Area," Journal of Educ. Res., Vol. 37, Feb. 1944, p. 470.

[21]Ibid, p. 471.

content fields."[22]

Similarly, Russell has stated that although different subject matter areas require different reading abilities, there are common capacities and achievements which are basic to most content reading. Then, Russell listed ten ways in which every intermediate or upper-grade teacher may give guidance in developing abilities most of which are useful in reading, arithmetic, science, social studies, health materials, and art materials. The ways listed were:

1. Establishing the purpose for which the content is to be read.
2. Making a quick preliminary survey of all the material.
3. Checking from the dictionary or other sources the meanings of technical or specialized words occurring in the material.
4. Giving complete attention to the material in the light of the understood purpose.
5. Using related pictures, maps, charts, and tables to verify ideas in the verbal materials, particularly those dealing with locations, quantitative data, and time sequence.
6. Becoming accustomed to verbal clues which give ideas of size, a sense of the passage of time, and sequence of events or topics.
7. Checking the accuracy of the sources of information.
8. Reflecting on the ideas presented in the printed materials in the light of related past experience.
9. Applying previous knowledge in order to make new generalizations and plans.
10. Where possible, subjecting these conclusions to the test of practical operation.[23]

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[22]Ibid, p. 472.

[23]David H. Russell, Op. cit., pp. 175-176.

These statements of Artley and Russell suggested that an improvement in the use of skills in one subject area will result in improvement in ability in a related subject area where these skills may be applied. Hence, if a program of intensive training in study skills increased the ability of division two pupils to use social studies reading skills on social studies material, some transfer of the use of these skills to related subject areas should result. If the degree of transfer were considerable then the development of social studies reading skills would be extremely worthwhile. However, it appeared advisable to experiment with division two pupils to gain more insight into the possibilities of transfer of these skills.

SUMMARY

This chapter has discussed some of the existing writings and research that appeared helpful in an investigation of social studies reading skills and has revealed that there is considerable information in some respects but that more information is needed, particularly at the division two level. There are authoritative lists of reading skills needed for the social studies, especially at senior levels. Many of these skills have been effectively developed, at the grade nine level, by a program of intensive training. It is agreed that problem-solving at senior levels requires the use of reading skills. It is recognized that there are common capacities basic to most content reading. However, there appeared to be a need for more information about the processes of solving social studies reading problems at the division two level, the

effects of a program of intensive training on the development of social studies reading skills at the division two level, and the possibilities of transfer of improvement in the use of social studies reading skills from social studies material to problems of a social studies type.

CHAPTER III

BACKGROUND OF THE METHOD

This chapter will discuss the methods used in three previous studies which dealt, either, with reading comprehension, or, with processes of reading and thinking. An analysis of the methods used in these studies was made to discover the difficulties encountered, particularly in the process-type investigations, and the ways in which the difficulties were overcome.

This investigation into the use of social studies reading skills at the division two level was concerned, mainly, with the methods pupils use to answer problems, rather than with the answers themselves. It investigated the understanding of the problem, the analysis of information, the use of library skills, the quality of reasoning employed, and the objectivity with which conclusions were reached. Thus, it was an investigation of reading and thinking processes rather than the products of such processes. Therefore, it was necessary to investigate the methods used in similar studies to find methods and procedures that might be suitable for use in this study. It was expected that an investigation of reading processes would encounter difficulties not shared by an investigation of the products of reading and thinking. These products are easily obtained through the use of a standardized test. Some of the difficulties encountered in process-type investigation were mentioned by Bloom and Broder:

> An investigation of thought processes would probably mean that the psychologist must study relatively small numbers of subjects under

> adequately controlled conditions rather than make the large-scale type of study ordinarily employed in investigations of individual differences. The former type of investigation would require not only large amounts of data on these subjects but also the development of new techniques for studying thought-processes,[1]

but these investigators suggested that "It should be possible to construct test situations such that each of a variety of methods of attack would be reflected in a different solution."[2] Suitable problems were selected or devised, and situations developed in which the pupils revealed the processes they used in solving the problems. Records of the problem-solving were kept and this data analyzed. The gathering and analyzing of data was carried out in as objective a manner as possible. As Bloom and Broder reported, it is difficult to do this without losing "much of the essence"[3] of the processes of thought.

A comparison of the purposes and experimental procedures used by Buswell[4] and by Bloom and Broder with those used by Artley[5] was made to discover the kinds of tests and problems used, the ways in which data was gathered and the ways in which data was analyzed. It was realized that their procedures would vary according to their purposes.

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[1]B. S. Bloom & L. J. Broder, Problem-Solving Processes of College Students. Chicago: The University of Chicago Press, p. 3.

[2]Ibid, p. 3.

[3]Ibid, p. 90.

[4]G. T. Buswell, Patterns of Thinking in Solving Problems. University of California Press, Berkley, 1956.

[5]A. S. Artley, "A Study of Certain Relationships Existing Between General Reading Comprehension and Reading Comprehension in a Specific Subject Matter Area," Journal of Educ. Res., Vol. 37, Feb. 1944.

AN ANALYSIS OF THE PURPOSES OF THREE INVESTIGATIONS

The investigations of Artley, Buswell, and Bloom and Broder were examined to determine their purposes and to compare their purposes with those of this investigation into the use of social studies reading skills. Artley investigated the relationship between general reading comprehension and social studies reading comprehension. Thus, Artley compared the products of thinking, or the scores pupils could make on standardized tests. However, Buswell investigated the approach of each student to problems of an arithmetic nature along with the major aim of describing sequences of thinking,"[6] in order to see whether there were consistent sequences of thinking for an individual problem-solver as he attacked several problems. Also, Buswell investigated these sequences for many individuals to see if there were general patterns of thinking in solving problems. In a somewhat similar way, Bloom and Broder investigated problem-solving processes to reveal the procedures used by successful and by non-successful problem-solvers.[7] Thus, Bloom and Broder hoped to suggest ways of improving problem-solving.

An examination of the three investigations revealed that Buswell and Bloom and Broder investigated the thinking processes, whereas Artley compared scores or achievement made on standardized tests. It was decided that the scores from a standardized test would be used to show the results of the use of social studies reading skills although the study

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[6] G. T. Buswell, Op. cit., p. 64.

[7] B. S. Bloom & L. J. Broder, Op. cit., p. 22.

would be mainly an investigation of reading and thinking processes.

II AN ANALYSIS OF THE KINDS OF TESTS AND PROBLEMS USED

Although tests for high school or college students were used in the three investigations, a study was made of the kinds of tests selected in relation to the purposes of the investigators.

To compare general reading comprehension with social studies reading comprehension, Artley chose standardized tests, only, and selected a series of tests appraising achievement in general reading comprehension, in certain aspects of reading in the social studies, in informational achievement in the social studies, and in non-verbal intelligence.[8] These tests were published by the Co-operative Test Service and by the Progressive Education Association.[9] They required a total testing time of approximately five hours.

Buswell used a series of tests specially constructed to reveal qualitative differences in problem-solving rather than to set standards of achievement.[10] There were three group tests constructed to show differences in the ability to select relevant, irrelevant, and needed facts, in the ability to estimate answers, and in the ability to do symbolic thinking. Another group test, requiring written answers, investigated problem-solving sequence. These tests gave a general view of the way problems were approached and so guided the construction and

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[8] A. S. Artley, Op. cit., pp. 466-467.

[9] Ibid, p. 468.

[10] G. T. Buswell, Op. cit., p. 67.

the use of the main test later in the study. The group testing was followed by individual testing on a smaller number of students of the ability to formulate generalizations.[11] The pupils' written answers, consisting of the statement of generalizations, were supplemented by voice recordings made as they "thought aloud." Experience gained from this procedure apparently helped later in developing a testing instrument. Finally, Buswell used an individual test consisting of a single problem designed to reveal the patterns of thinking of the students.[12] This problem could be solved by algebra or by "logical reasoning".[13] The algebraic method led to a choice between one or two unknowns, the formulation of equations, and the solution of the equations. The method of logical reasoning apparently led to the formulation of basis assumptions, the choice of a method, the limitation of the estimated answer, and the performance of the steps necessary to solve the problem. This test provided the basis for the major part of the study.

Bloom and Broder were interested in the problem-solving processes used by students in an academic environment so the problems used were selected from the tests and examinations given to the students in the College of the University of Chicago.[14] These tests dealt with various academic fields. They gave the student clear-cut goals to achieve and an

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[11] Ibid, p. 135.

[12] Ibid, p. 102.

[13] Ibid, p. 119. Buswell explains that he does not imply that the algebraic method is not logical.

[14] B. S. Bloom & L. J. Broder, Op. cit., pp. 7-8.

opportunity to make a conscious plan of attack. Moreover, Bloom and Broder stated that the solutions to these problems may be analyzed objectively whereas the solutions to real-life problems are difficult to analyze.

> The examination problems, on the other hand, involve rather clear-cut solutions and, to a large extent are so oriented as to divorce values from the problem-solving situation. The examination problems are very clearly structured, and competent individuals in a subject field can agree on the solution regarded as most correct or adequate.[15]

The investigators used a limited number of problems each requiring a solution time of five minutes or less. They found that six to eight well-chosen problems would reveal most of the problem-solving characteristics of an individual student.[16]

The examination of the types of tests and problems used by Artley, Buswell, and Bloom and Broder indicated that a standardized test could be used to investigate the achievement of students, but that problems either selected from examinations, or constructed especially for the study were preferable in an investigation of the use of reading skills. The conclusion was drawn that it would be desirable to use problems from examinations, along with constructed or adapted problems to investigate the use of social studies reading skills in a classroom situation. Also, it was thought desirable to use a real-life type of problem to investigate the transfer of the ability to use social studies reading skills from the social studies classroom situation to a related

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[15]Ibid, p. 8.

[16]Ibid, p. 24.

situation. It was noted that Artley compared achievement in general reading, in reading in the social studies, and in social studies information. Hence, it was felt that a comparison of the ability to use social studies reading skills in classroom-type problems and on related problems should be made. Also, it was apparent that a comparison of the results from the use of the problems could be made to test the suitability of the problems for the pupils.

III AN ANALYSIS OF THE DATA GATHERING TECHNIQUES

The data gathering techniques used by Artley, Buswell, and Bloom and Broder were examined. It was found, that to observe thinking processes, Buswell and Bloom and Broder found it necessary to use the interview technique, whereas Artley was able to obtain the scores he wanted by personally administering standardized tests to two hundred and forty-two eleventh grade pupils.[17]

Moreover, Buswell developed a testing instrument to analyze problem-solving processes,[18] derived categories from the actual thinking of the students, and yet made the analysis as objective as possible. Firstly, a preliminary investigation with groups and with individuals was conducted. Then, Buswell gave a series of groups tests requiring written answers, designed to reveal the student's ability to read problems, to estimate answers, to follow a proper sequence of operations,

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[17]A. S. Artley, Op. cit., p. 468.

[18]G. T. Buswell, Op. cit., pp. 102-111.

and to use abstract symbols.[19] From the answers, a set of eighty-one cards that seemed to list all the individual problem-solving procedures used by the students were made. Then the cards were classified, numbered, and arranged in groups. Each group represented a step in the solution of the problem. The individual cards represented individual choices of procedure within the step. There followed a second series of individual interviews in which a new group of subjects solved the same problem with voice recordings. This time the subjects also selected the cards which explained the procedures used. Buswell found that the use of the numbered cards "permitted a more satisfactory analysis than the voice recording alone, the method used in the first stage of the study."[20] However, the analysis of the voice recordings apparently revealed additional procedures as the number of cards in the card-selection test was increased to one hundred fourteen, an unwieldy number. These procedures were examined and condensed, and were typed on thirty-eight cards. Again the cards were grouped, each group representing a problem-solving step. The groups were placed in separate envelopes to make up the testing instrument. The final individual testing of sixty-one college students was carried out using this testing instrument. The students could choose from a variety of problem-solving procedures, and the choices had been derived from actual problem-solving. Yet this final testing was highly objective as the examiner recorded the numbers of the cards selected.

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[19]Ibid, p. 135.

[20]Ibid, p. 104.

Bloom and Broder investigated the problem-solving characteristics of a relatively small number of students at the University of Chicago. To reveal the characteristics of good and poor problem-solving, individual interviews were conducted with six academically successful and six academically non-successful students.[21] The students were given a brief period of training in verbalizing responses. During the interview the examiner took as complete a record as possible of the oral responses. An attempt to use a wire-recorder had been made but it was found that this disturbed the students excessively. After the interviews were completed the protocols were examined to appraise the quality of the mental processes. An attempt was made to fit the data into existing classifications, most of which had been obtained by a logical analysis of thought. As these classifications did not seem to fit the recorded verbalizations, Bloom and Broder found it necessary to develop a check list to fit the data. The characteristics were listed under four major headings: understanding of the problem, understanding of the ideas contained in the problem, general approach to the solution of the problem, and attitude toward the solution of the problem. From five to twenty-five characteristics were listed under each of these four major categories.[22] Thus the characteristics of good and poor problem-solving were secured and models of good problem-solving obtained.

Then Bloom and Broder investigated the change in the character-

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[21] B. S. Bloom & L. J. Broder, Op. cit., pp. 24-25.

[22] B. S. Bloom & L. J. Broder, Op. cit., pp. 108-109.

istics of problem-solving shown by a group of typical students over a short period of time. A group of twenty-seven first-year students were interviewed, once during their first few weeks at the College, and again six to eight weeks later. The interviews were conducted in the same manner as with the extreme students. The check list which had been developed in the analysis of the protocols of the extreme students was used to analyze the protocols from this group of students.

Then, the change in problem-solving over the six to eight week period was investigated. Bloom and Broder hoped to suggest ways of improving problem-solving. A number of students who had failed to pass the comprehensive examinations of the College were selected and worked with individually and in groups.[23] For problem-solving material, Bloom and Broder used the same problems that had been used in the interviews with the extreme and the typical students. The models of good problem-solving obtained from the successful problem-solvers were studied by students in the remedial group. The remedial students compared their own performance to that of the model students in an attempt to overcome their weaknesses. The opinions of the students, and of their instructors, and their improved performance both in practice sessions and on quantitative examinations indicated that the remedial experiment was successful.

Following the examination of the techniques used by Artley, Buswell, and Bloom and Broder, it was decided that the results of the use of reading skills could be measured by means of a standardized test.

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[23]Ibid, pp. 62-89.

However, it was decided that the individual interview technique would be used in order to observe the use of social studies reading skills.

IV AN ANALYSIS OF THE METHODS OF TREATING DATA AND REPORTING FINDINGS

An examination of the methods of analyzing data and reporting findings used by Artley, Buswell, and Bloom and Broder revealed that Artley was able to use statistical techniques which Buswell, and Bloom and Broder, with their non-quantitative data, were unable to use. From the scores of two hundred students, Artley worked out correlations, inter-correlations, and regression equations through the use of International Business Machines.[24]

Instead of scores, Buswell had records of the sequence of operations of each student, as shown by the selection of numbered cards from the testing instrument. Tables showing the frequencies of use of each sequence and figures to illustrate the patterns of problem-solving thinking of the various groups of students were constructed.

Bloom and Broder found that statistical procedures like those used by Artley could not be used in an investigation of mental processes.

> It is clear that an investigation of processes of thinking does not lend itself to the statistical refinements which characterize investigations of the products of thought. In studies involving such products, it is possible to focus attention on the specific types of information desired, and the data can be classified, analyzed, and summarized in a quantified and objective manner. This is not at present true of studies on the processes of thought. Attempts to describe processes of thinking are comparable in difficulty to attempts to describe a ballet or musical composition in

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[24]A. S. Artley, Op. cit., p. 458.

verbal terms.[25]

Bloom and Broder developed a check-list that permitted them to classify most of the thinking processes, but felt that any attempt at classification must result in a loss of some parts of the activity of thinking. For the most part data was reported in the form of verbal descriptions of the problem-solving activity of individual students. Conclusions were derived from these descriptions or from the records of the interviews.

The conclusion was drawn that refined statistical techniques could not be used on the results of an investigation into the use of social studies reading skills. However, it was decided that the written records of the oral responses to problems obtained during the interviews would be marked through the use of suitable check-lists. The resulting scores would be analyzed through the use of appropriate statistical techniques.

SUMMARY

In this chapter the methods used by Artley in his study of reading comprehension, and Buswell and Bloom and Broder in their problem-solving investigation were examined.

It was found that Buswell and Bloom and Broder investigated thinking processes, or reading and thinking processes, and it was felt that an investigation of social studies reading skills was primarily concerned

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[25] B. S. Bloom & L. J. Broder, Op. cit., p. 90.

with reading and thinking processes. However, it was also felt that the scores from a standardized test should be used to reveal the results of the use of social studies reading skills, somewhat as Artley used the scores from standardized tests to measure achievement in reading comprehension. Then, in order to measure pupil performance in a classroom situation it was decided that problems would be selected from standardized tests in the manner used by Bloom and Broder when they selected problems from College examinations. Also, it was considered advisable to construct or adapt problems that would require the use of certain reading skills, as it was noted that Buswell constructed problems to investigate the use of certain problem-solving abilities.

It was noted that the investigations of Buswell and Bloom and Broder used the individual interview technique to observe the problem-solving processes, and it was decided that this technique would be used to observe reading and thinking processes. It was also noted that in the Bloom and Broder investigation the interviewers made written records of the verbalized responses of the pupils, and it was felt that this procedure could be adapted to an investigation into the use of social studies reading skills at the division two level.

Apparently, statistical refinements cannot be used in reporting the findings of an investigation into reading and thinking processes as it was noted that Buswell used tables to report his data and Bloom and Broder used verbal descriptions. However, Bloom and Broder developed a check-list to mark the written records of the oral responses to problems made by the pupils during the interviews. It was decided that this procedure

would be followed and the scores that resulted from the marked written records would be treated with the appropriate statistics.

CHAPTER IV

METHODS AND PROCEDURES USED IN THIS STUDY

This chapter will describe the methods and procedures used in this study. For this investigation into the use of social studies reading skills sixty pupils were selected from the University of Alberta experiment in problem-solving. In February 1958, the selected pupils were tested by standardized tests in reading and social studies and were interviewed individually and required to give oral responses to social studies problems. During the succeeding four months these pupils received intensive training in study skills as they participated in the University study. In June they were re-tested. The testing procedures used in February were repeated. Both in February and in June a team of interviewers recorded the oral responses in writing. These records of oral responses shall hereafter be called protocols. An attempt was made to analyze the protocols objectively. The scores from the tests and marked protocols were subjected to statistical treatment.

THE UNIVERSITY OF ALBERTA EXPERIMENT IN PROBLEM-SOLVING

This study was part of a larger study conducted by the University of Alberta. The University experiment was a pilot study, investigating the development of problem-solving skills at the division two level. Approximately six hundred pupils in experimental and control classrooms were involved. The teachers from the experimental classrooms attended seminars where they discussed methods of improving problem-solving and

the progress that resulted from using these methods.

Since the teachers were experimenting with teaching procedures, a wide variety of techniques and methods were used in the experimental classrooms. Very little evidence that problem-solving processes can be taught at the division two level was found, but a review of previous research suggested a sequence of steps in problem-solving. This sequence of steps was introduced as a model as follows:

1. Recognizing the Problem
2. Defining the Problem
3. Organizing and Recording Observations
4. Formulating Possible Solutions
5. Verifying Conclusions
6. Evaluating Conclusions[1]

Each teacher chose a different approach to the development of problem-solving processes, and introduced other models, materials, and techniques, as he wished. For instance, one teacher emphasized self-evaluation, whereas another had many workshop sessions wherein the pupils discussed their work in groups. Moreover, the teachers were free to use the procedures in various subjects.

Thus, the University study contained a variety of approaches to the development of problem-solving skills at the division two level. It was planned, in this way, to allow the teachers freedom to discover and test possible ways of teaching problem-solving processes, at this level.

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[1]M. D. Jenkinson & D. M. Lampard, "Problem Solving and Achievement," Alberta Journal of Educational Research, to be published June 1959.

It was felt that, although there is no one way to teach a process, valuable techniques and procedures would be developed.

Early in February 1958, the S.T.E.P. tests[2] of social studies and of reading, forms 4A and 4B, were administered to all the pupils of the University study. From February until June the experimental procedures were carried on in the experimental classrooms. Early in June all the pupils were re-tested. Alternate forms of the S.T.E.P. test of social studies and reading were used.

THE SELECTION OF PUPILS FOR THE INVESTIGATION INTO THE USE OF SOCIAL STUDIES READING SKILLS

Sixty pupils were selected from the experimental and control classrooms of the University study. An analysis of previous studies indicated that most of the investigations into reading and thinking processes had dealt with high school and college students. It was felt that division two pupils would be suitable subjects for an investigation into the use of social studies reading skills since less research of this type has been done with this age group.

The selection of pupils was made on the basis of the S.T.E.P. test of reading. The S.T.E.P. reading test is designed to assess the pupils' ability to understand and interpret printed material. Since this investigation was concerned with reading and thinking processes it was felt that the S.T.E.P. test was a justifiable basis for the selection

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[2]Sequential Test of Educational Progress, Cooperative Test Division, Educational Testing Service, Los Angeles, 1957.

of subjects.

Five high and five low achievers were selected from each of the three grades in the experimental and the control classrooms. Thus there were fifteen high and fifteen low achievers from the experimental schools, and fifteen high and fifteen low achievers from the control schools, or a total of sixty pupils. The high achievers from the experimental schools were paired with high achievers from the control schools, and the low achievers from the experimental schools with low achievers from the control schools. Pairing was done on the basis of the scores from the S.T.E.P. test of reading. Thus the pupils were equated in their ability to use a fundamental skill. High and low achievers were selected as the range of achievement would make it easier to observe the effects of the program of intensive training in problem-solving on the use of social studies reading skills by pupils at the high and the low levels. Examples of good and poor types of problem-solving would be obtained and the differences between good and poor problem-solving could be classified.

When the final interviews were conducted in June 1958 it was found that three pupils had moved and were no longer available. Fortunately, two were a matched pair from the low achievers in grade four. The other was a grade five high achiever from an experimental class. Her partner in the control class was dropped from the study. This reduced the number of pupils to fifty-six. There were fourteen pairs of high achievers and fourteen pairs of low achievers.

THE SELECTION AND CONSTRUCTION OF TESTS AND PROBLEMS

The analysis of previous studies guided the selection and con-

struction of tests and problems. It was decided to use a combination of a standardized test, the S.T.E.P. test of social studies; problems selected from the S.T.E.P. test and problems developed especially for use in the study. The problems selected and developed are to be found in Appendices B and C.

The scores from the S.T.E.P. test of social studies were obtained and included in this study to supplement the scores from the marked protocols and to show that the problems developed for use in the study were suitable for division two pupils. The S.T.E.P. test of social studies, forms 4A and 4B, is a standardized test of the knowledge and skills that division two pupils are expected to learn. A comparison of the February scores from the S.T.E.P. test with the February scores from the analysis of the protocols was made to show that the pupils were being tested, during the interviews, for skills that they are expected to learn.

The June scores on the STEP test of social studies were analyzed to measure the pupils' use of these skills. This test is designed to test the ability to identify generalizations, to evaluate the author's viewpoint, to recognize propaganda, to assess the adequacy of data, to apply outside information, and to draw valid conclusions.[3] Since it is a standardized test of the ability to use social studies reading skills it was suitable for use in this study.

To observe the processes used to solve the problems on a standardized test twenty-seven questions from Form 4A, and a corresponding twenty-

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[3]Manual for Sequential Test of Educational Progress, Cooperative Test Division, Educational Testing Service. Los Angeles: 1957, p. 3.

seven questions from Form 4B of the S.T.E.P. test of social studies were selected for the pupils to discuss. It was felt that the time required to investigate the pupil response to the seventy questions on the test would be too great and that a smaller number of questions would serve as well to reveal the use of reading skills. The questions selected required the ability to understand a problem, to interpret maps and other pictorial material, to select and interpret data, to draw conclusions, and to locate information in books.

Two problems with equivalents for later testing were developed in an attempt to further study the problem-solving skills used by these pupils in a practical school situation. One problem was constructed, requiring the pupil to mention sub-topics that should be studied in an enterprise on Hawaii, and to select the sub-topic on which he would like to work. Then the pupil was required to tell where he would find information on his topic, how he would locate information in books, how he would select and organize the information, and how he would report to the class. This problem was designed to test the pupil's ability to use the library, and to plan a report to a larger group. Also, it would require him to use many of the skills required by the S.T.E.P. test, but in a somewhat less structured situation. For re-testing the enterprise topic Cuba was substituted for Hawaii. The second problem used in this part of the testing was taken from Part II of the Wrightstone Test of Critical Thinking in the Social Studies in Grades Four, Five and Six.[4] This part of the

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[4]J. Wayne Wrightstone, Test of Critical Thinking in the Social Studies in Grades Four, Five and Six. Bureau of Publications, Teachers College, Columbia University, New York, 1939.

Wrightstone test was designed to provide "an index of the pupil's ability to interpret, to judge, to infer, and to generalize from social studies facts and data."[5] There are two forms, A and B, to the Wrightstone test. For initial testing a problem was selected from Form A and for re-testing the corresponding problem was selected from Form B. The problem consisted of a paragraph followed by four statements which were to be marked as either proven true or false by the paragraph, or not proven by the facts stated in the paragraph. The problem was adapted for use in this study. The four statements were changed to questions that would require the pupil to phrase an answer. One additional question was added. The additional question tested the pupil's ability to interpret the data and to reason within the limits of the data. It was felt that the adapted problem would test the use of many of the reading skills used to answer the problems from the S.T.E.P. test, but in a situation where the pupil was required to formulate rather than select an answer.

In an attempt to evaluate growth in the ability to use social studies reading skills on problems of a social studies type a pair of problems, one for initial testing and one for final testing, was devised. The pupil was presented with a problem, the successful solution of which required the use of social studies reading skills. The pupil was asked to tell what he would do in a certain situation but was not given other guiding questions. This part of the testing was designed not only to investigate growth in social studies reading skills, but also to investi-

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[5] J. Wayne Wrightstone, Manual for Test of Critical Thinking in the Social Studies in Grades Four, Five and Six. Bureau of Publications, Teachers College, Columbia University, New York, 1939, pp. 1-2.

gate their transfer from social studies problems to problems of the social studies type.

THE USE OF THE INTERVIEW TECHNIQUE TO OBSERVE THOUGHT PROCESSES

A special technique was required to examine the reading and thinking processes as they are not overt behaviour readily observed and measured. The analysis of methods of research used in previous studies suggested that the interview technique could be used. Working with College students, Buswell[6] and Bloom and Broder[7] successfully used the technique of having students "think aloud" as they solve a problem. Jenkinson[8] found this method satisfactory for use with high school students and Collier[9] used it successfully with pre-adolescents in grade seven. It was felt that the technique could be used satisfactorily with the younger students of division two.

To investigate the growth in the use of social studies reading skills initial and final interviews were carried out, at the beginning and at the conclusion of the University of Alberta experiment in study

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[6]G. T. Buswell, Patterns of Thinking in Solving Problems. University of California Press, Berkley, 1956.

[7]B. S. Bloom & L. J. Broder, Problem-Solving Processes of College Students. Chicago: The University of Chicago Press.

[8]Marion Dixon Jenkinson, Selected Processes and Difficulties of Reading Comprehension. Chicago, Dec. 1957. Unpublished Ph. D. dissertation.

[9]Juanita Collier, A Study of Problem-Solving Processes and Motivational Patterns of Thirty Pre-Adolescent Pupils. Chicago, Illinois, August 1956. Unpublished Ph. D. dissertation.

skills. The initial interviews took place in February, a few days after the S.T.E.P. tests in reading and social studies had been administered to the pupils in the University of Alberta study. The pupils were transported from the classrooms to two central locations.

The interview procedure presented certain problems. The thinking processes may be partly sub-vocal. Furthermore, pupils in division two have some difficulty articulating their thoughts and the interview situation may disturb them. Moreover, the interviewers have difficulty in recording fully in writing the oral responses of the pupils.

To a large extent the success of the interviews depended upon the interviewers. Five persons were selected to assist the examiner in conducting the interviews. They were selected from among the Education students at the University of Alberta or the substitute teachers in Edmonton. Three interviewers attended a trial session to experiment with the interview technique. In order to make the interviewing as objective as possible, an attempt was made to overcome the differences in fluency among pupils and the differences among interviewers.

All of the interviewers were given a sheet of instructions clearly outlining the procedures to be followed. These instructions were discussed before the interviews began. The interviewers were instructed to establish rapport with the child by a few moments of casual talk, and by telling him that he had been selected to help in an experiment. The pupil was asked to answer the problems listed on the instruction sheet and to give reasons for his answers.

The first part of the interview was based on the problems selected from the S.T.E.P. social studies test. Since the pupil had written this

test his answer sheet was in the hands of the interviewer. The interviewer and the child each had a copy of the S.T.E.P. test. The interviewer was instructed to say to the child: "For question number __ you gave (A, B, C or D) as your answer. Think aloud as you tell me why you gave that answer. You may change your answer if you wish but tell me why you chose a different answer." If the pupil's answer was rather brief the interviewer said, "Tell me more." or, if he had given no explanation for his answer, "Tell me something."

The instructions for the second and third parts of the interview, the social studies problems with guiding questions, and the problem of a social studies type without guiding questions, were similar. The interviewer asked the pupil to read each problem silently, and then give an oral answer with reasons for the answer. Again if the pupil failed to respond well, the interviewer said "Tell me more." or "Tell me something."

The interviewer was instructed not to influence the pupil's thinking in any way, nor to change the meaning of his words. Following the set procedure, the interviewer attempted to solicit as full a response as possible and record it in writing.

Early in June, the final interviews were carried out. The same two central locations used for initial interviews were used and the pupils were transported to and from these centres. Only one of the original interviewers, besides the examiner, was able to take part in the final interviews so substitutes were obtained. They received some instructions a few days previous to the interviewing. The instruction sheets used in February were discussed with them before the interviews began. The procedures used in the initial processes were repeated.

DEVELOPING A CHECK LIST

A check list for marking the protocols, or records of verbalizations, was devised to assess the growth in the use of social studies reading skills from the time of the first testing or interviewing until the time of the second. Since the pupils phrased answers, each in his own way, there was a great variety in the length and in the quality of responses. However, a pupil could be expected to show evidence of the use of certain skills. Bloom and Broder[10] developed a check list for the skills used by students in their problem-solving experiment. The writings of Russell[11] and Fay[12] list many social studies reading skills. The skills that the S.T.E.P. test of social studies is designed to test are listed in the manual that accompanies it. A check list was developed based on these writings, but adapted to the protocols from the interviews. The social studies reading skills found in these writings were listed. Twenty skills from this list were selected. They were the skills that seemed most appropriate for the problems upon which the interviews were based. A temporary check list was drawn up and tried out on a few protocols. It was found that some of the categories overlapped or duplicated each other and others were poorly defined or very difficult to

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[10] B. S. Bloom & L. J. Broder, Op. cit.

[11] David B. Russell, Children Learn to Read. Toronto: Ginn and Company, 1949.

[12] Leo Fay, "How Can We Develop Reading Study Skills for the Different Curriculum Areas?" The Reading Teacher, March, 1953, Vol. VI No. 4.

apply to the protocols. The check list was revised. In its final form there were thirteen categories under three headings.

To simplify marking, the numbers of the problems were placed opposite the category to which each applied. Since two forms of the S.T.E.P. test had been used and the matching questions did not necessarily have the same numbers there resulted a separate check list for each form of the S.T.E.P. test. The marking was done by placing a check mark (✓) or an (x) by the problem number.

CHECK LIST ON SOCIAL STUDIES READING SKILLS

Section A (Selected problems from the S.T.E.P. test of social studies Form 4A)

I General Reading Ability

1. Skill in defining the problem 20 21 22 23 24 32 33 34 35 / 9 10 11 12 13 14 15 16 18 24 25 26 27 28 33 34 35

2. Skill in recognizing and understanding key words. 20 21 22 24 34 / 9 12 14 25 28 34 35

3. Skill in translating difficult material into more familiar terms. 32 33 / 14 15 28

4. Skill in interpreting pictorial representations, graph legends and symbols. /24 25 26 27 28

5. Skill in interpreting a map /9 10 11 12

II Ability to Solve a Social Studies Problem or Problem of a Social Studies Type

1. Skill in arranging ideas in sequence. 20 21 22/

2. Skill in recognizing the limits of data. /14

3. Skill in picking out relevant data for a purpose. 33 34 35 / 13 15 16 18 26 28

4. Skill in using outside information to assist in reaching a solution 20 21 23 24 / 10 12 13 14 16 18 25 27 34 35

5. Skill in drawing satisfactory conclusions. 33 34 35 / 10 11 12 13 14 15 16 18 28 34 35

III Ability to Use Social Studies Materials to Gather Information

1. Skill in the use of the library.

2. Skill in locating information in a book. /33 34 35

3. Skill in preparing a report to a larger group.

Total _____

CHECK LIST ON SOCIAL STUDIES READING SKILLS

Section B (Selected problems from the S.T.E.P. test of social studies Form 4B)

I General Reading Ability

1. Skill in defining the problem 21 22 23 24 25 32 33 34 35/ 10 11 12 13 14 15 16 17 18 27 28 29 30 31 32 33 34

2. Skill in recognizing and understanding key words. 21 22 23 25 31 33 34 / 13 14 16 18 29

3. Skill in translating difficult material into more familiar terms. 32 33 / 15 32 34

4. Skill in interpreting pictorial representations, graph legends and symbols. / 27 28 29 30 31

5. Skill in interpreting a map. / 10 11 12 13

II Ability to Solve a Social Studies Problem or Problem of a Social Studies Type

1. Skill in arranging ideas in sequence 21 22 24 /

2. Skill in recognizing the limits of data / 31

3. Skill in picking out relevant data for a purpose. 33 34 35 / 14 15 16 17 18 31

4. Skill in using outside information to assist in reaching a solution. 21 22 23 24 25 33 / 10 11 13 15 16 17 32 34

5. Skill in drawing satisfactory conclusions. 33 34 35 / 10 11 13 15 16 17 18 29 31 32 34

III Ability to Use Social Studies Materials to Gather Information

1. Skill in the use of the library.

2. Skill in locating information in a book. / 32 33 34

3. Skill in preparing a report to a larger group.

Total _____

Similarly another check list was developed for the problems. It was found that the check list could be divided down the middle and the social studies problems with guiding questions and the problem of the social studies type without guiding questions could be placed on the one check list and yet kept separate. The protocols were marked in the manner used to mark the responses to the problems from the S.T.E.P. test except that a few problems were given ratings under certain categories. This was because the pupil's response was expected to show two or three rather distinct concepts regarding the data or reporting techniques.

CHECK LIST ON SOCIAL STUDIES READING SKILLS

Section C (Social studies problems with guiding questions and problems of the social studies type without guiding questions)

		Social Studies Problems Hawaii & Neth. or Cuba & U. S.	Problem of Social Studies Type
I	General Reading Ability		
1.	Skill in defining the problem.	Hawaii, Cuba) a b c d Neth., U. S.) I II III IV V	Ankle, Fishing)
2.	Skill in recognizing and understanding key words.	Neth., U. S.) I II IV V	
3.	Skill in translating difficult material into more familiar terms.	Hawaii, Cuba) b Neth., U. S.) V	
4.	Skill in interpreting pictorial representations, graph legends and symbols.		
5.	Skill in interpreting a map.		
II	Ability to Solve a Social Studies Problem or Problem of a Social Studies Type		
1.	Skill in arranging ideas in sequence.	Hawaii, Cuba) c d	
2.	Skill in recognizing the limits of data.	Neth., U. S.) III	Ankle, Fishing) (3)
3.	Skill in picking out relevant data for a purpose.	Hawaii, Cuba) c (3) Neth.) I II IV V U. S.) I II III IV	
4.	Skill in using outside information to assist in reaching a solution.	Hawaii, Cuba) a Neth., U. S.) III	Ankle, Fishing)
5.	Skill in drawing satisfactory	Neth. II III U. S. III IV	Ankle Fishing

III Ability to Use Social Studies Materials to Gatner Information

1.	Skill in the use of the library.	Hawaii) Cuba)	a (3)	
2.	Skill in locating information in a book.	Hawaii) Cuba)	b (3)	
3.	Skill in preparing a report to a larger group.	Hawaii) Cuba)	d (2)	
			Total _____	Total _____

To give the markers a definite basis upon which to evaluate the responses a check list guide was drawn up. The portion of this guide for use with the problems from the S.T.E.P. test form 4A and the problems with and without guiding questions used in the final interviews is given in Appendix D.

To obtain objectivity, three markers, including the examiner, worked independently marking the protocols. Each protocol was marked by the three markers using the check lists and check list guides. The markers marked a few protocols and then discussed their results to establish a reasonable degree of uniformity in marking. When the marking was completed the score allotted to the pupil was the average of the scores given by the three markers. The marked check lists were carefully compared and disagreement among the markers counted. The percentage disagreement in marking the protocols from the first round of interviews was 4.2%; for the second 3.3%. This was considered to be satisfactorily low.

SUMMARY

This chapter has outlined the selection of subjects, the selection

and construction of tests and problems, the technique used to observe reading and thinking processes, and the methods used to analyze the data. Groups of high and low achievers were selected from the division two experimental and control classrooms of the University of Alberta experiment in study skills. The S.T.E.P. test of social studies, problems selected from the S.T.E.P. test of social studies, and adapted or constructed problems were used to observe reading and thinking processes. The protocols that resulted from the use of this technique were marked as objectively as possible.

CHAPTER V

RESULTS OF THE STUDY

This chapter discusses the analysis of the test scores of the groups of pupils in terms of the hypotheses. The pupils were selected from division two experimental and control classrooms. These selected students were high and low achievers on the S.T.E.P. test of reading. They were tested before and after a period of intensive training in study skills by the S.T.E.P. test of social studies. In addition, they were tested by the interview technique on problems selected from the S.T.E.P. test of social studies, on social studies problems with guiding questions, and on a problem of a social studies type without guiding questions.

The t-test[1] and the sign test[2] for differences in paired samples were used for the statistical treatment of the February and June 1958 scores. These tests were chosen because they may be used with small numbers. When the pupils from the experimental classrooms were paired with pupils from control classrooms, and test results of the groups of high and low achievers analyzed separately, the number of pairs was rather small. The t-test was used to test the significance of scores in terms of the hypotheses. The sign-test is not considered to be as pre-

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[1]J. F. Kenney & E. S. Keeping, Mathematics of Statistics. Toronto: D. Van Nostrand Company, Inc., pp. 184-185.

[2]Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences. Toronto: McGraw Hill Book Company, Inc., pp. 68-75.

dictive a test as the t-test,[3] but it is considered suitable for use with numbers as small as the numbers of pairs in this study. When the amount of significance was dubious the sign test was used as an additional test of the significance of difference in scores. The .05 level of confidence was chosen as an acceptable level of significance. If a difference was found to be significant at the .01 level it was termed highly significant. A difference significant at the .10 level was termed 'tending to show significance.'

THE FIRST HYPOTHESIS

The first hypothesis is discussed in the light of the statistical analysis of the scores. This hypothesis stated that, at the beginning of the study, the groups of high and low achievers from the experimental schools would not show a significant difference from the groups of high and low achievers from the control schools in:

a) the use of reading study skills as shown by the S.T.E.P. test of social studies

b) verbalized responses to certain problems from the S.T.E.P. test of social studies

c) verbalized responses to social studies problems with guiding questions

d) verbalized responses to problems without guiding questions.

Each part of this hypothesis will now be discussed.

a) <u>The use of social studies reading skills as shown by the S.T.E.P. test of social studies</u>. The February scores on the S.T.E.P. test of

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[3] J. F. Kenney & E. S. Keeping, Op. cit., p. 207.

social studies of the high and low achievers from the experimental and control classrooms were obtained and the t-test used upon them. The results are given in Table I. The pupils are designated by numbers preceded by the first two letters of the name of their group. Pupil number one from the group of high achievers from the experimental classrooms is called EH 1. The pupil from the control classrooms paired with pupil EH 1 is called CH 1. Similarly, pupil number one from the group of low achievers from the experimental classrooms is called EL 1, and the pupil from the control schools paired with him is CL 1. In the succeeding tables pupils will be designated in the same way.

The t-values of 0.1370 and 0.6337 shown on Table I revealed that there was no significant difference between the scores of the two groups of high achievers from the experimental and control classrooms, or between the two groups of low achievers, on the basis of the February scores made on the S.T.E.P. test of social studies.

b) Verbalized responses to certain problems from the S.T.E.P. test of social studies. Table II shows the initial scores from the responses to certain problems from the S.T.E.P. test of social studies. The scores were obtained by three persons marking the protocols using the check-list described in the previous chapter. The significance of difference between the scores of the groups of high and low achievers from the experimental and control classrooms was found by using the t-test.

As can be seen from Table II, the t-values for the significance of the difference between the February scores of the two groups of high achievers and the two groups of low achievers were 1.1353 and 0.2196

TABLE I

SCORES OF THE GROUPS OF HIGH AND LOW ACHIEVERS, S.T.E.P. TEST OF SOCIAL STUDIES, FEBRUARY 1958

HIGH EXPERIMENTAL		HIGH CONTROL		DIFFERENCE	LOW EXPERIMENTAL		LOW CONTROL		DIFFERENCE
Pupil	Score	Pupil	Score		Pupil	Score	Pupil	Score	
EH 1	52	CH 1	61	- 9	EL 1	51	CL 1	23	+28
EH 2	50	CH 2	63	- 13	EL 2	23	CL 2	53	-30
EH 3	58	CH 3	62	- 4	EL 3	40	CL 3	38	+ 2
EH 4	61	CH 4	50	+ 11	EL 4	43	CL 4	27	+16
EH 5	60	CH 5	58	+ 2	EL 5	30	CL 5	41	-11
EH 6	65	CH 6	58	+ 7	EL 6	26	CL 6	29	- 3
EH 7	47	CH 7	53	- 6	EL 7	27	CL 7	34	- 7
EH 8	61	CH 8	61	0	EL 8	25	CL 8	38	-13
EH 9	56	CH 9	59	- 3	EL 9	32	CL 9	31	+ 1
EH 10	53	CH 10	45	+ 8	EL 10	32	CL 10	44	-12
EH 11	42	CH 11	41	+ 1	EL 11	27	CL 11	28	- 1
EH 12	51	CH 12	39	+ 12	EL 12	30	CL 12	14	+16
EH 13	42	CH 13	44	- 2	EL 13	13	CL 13	20	- 7
EH 14	45	CH 14	38	+ 7	EL 14	19	CL 14	34	-15
EH 15	54	CH 15	61	- 7	EL 15	26	CL 15	22	+ 4
N=15		N=15			N=15		N=15		
Mean=53.137		Mean=52.867			Mean=29.60		Mean=30.933		
Var.=47.800		Var.=78.163			Var.=83.307		Var.=101.664		

Significance of difference of scores (t-test): non-significant. t=0.1370

Significance of difference of scores (t-test): non-significant. t=0.6337

TABLE II

VERBALIZED RESPONSES TO CERTAIN PROBLEMS FROM THE S.T.E.P. TEST OF SOCIAL STUDIES, FEBRUARY 1958

HIGH EXPERIMENTAL		HIGH CONTROL		DIFFERENCE	LOW EXPERIMENTAL		LOW CONTROL		DIFFERENCE
Pupil	Score	Pupil	Score		Pupil	Score	Pupil	Score	
EH 1	69	CH 1	67	+ 2	EL 1	56	CL 1	31	+25
EH 2	40	CH 2	66	-26	EL 2	14	CL 2	44	-30
EH 3	34	CH 3	62	-28	EL 3	33	CL 3	20	+13
EH 4	74	CH 4	36	+38	EL 4	18	CL 4	19	- 1
EH 5	85	CH 5	73	+12	EL 5	26	CL 5	47	-21
EH 6	54	CH 6	73	-19	EL 6	18	CL 6	12	+ 6
EH 7	23	CH 7	46	-23	EL 7	15	CL 7	22	- 6
EH 8	49	CH 8	77	-28	EL 8	30	CL 8	38	- 8
EH 9	44	CH 9	57	-13	EL 9	18	CL 9	11	+ 7
EH 10	43	CH 10	30	+13	EL 10	40	CL 10	24	+16
EH 11	35	CH 11	38	- 3	EL 11	9	CL 11	7	+ 2
EH 12	24	CH 12	26	- 2	EL 12	20	CL 12	4	+16
EH 13	43	CH 13	38	+ 5	EL 13	3	CL 13	22	-19
EH 14	37	CH 14	26	+11	EL 14	4	CL 14	11	- 7
EH 15	47	CH 15	72	-25	EL 15	6	CL 15	12	- 6
N=15		N=15			N=15		N=15		
Mean=46.739		Mean=52.467			Mean=20.667		Mean=21.600		
Var.=153.827		Var.=325.641			Var.=195.275		Var.=163.440		

Significance of difference in scores (t-test): non-significant. t=1.1353

Significance of difference in scores (t-test): non-significant. t=0.2196

respectively. Although the two groups from the control classrooms made slightly higher scores than the two groups from the experimental classrooms there was no significant difference between the two groups. Therefore, the groups of high and low achievers from the experimental classrooms did not show a significant difference from the high and low achievers from the control schools in the use of social studies reading skills as shown by the S.T.E.P. test of social studies.

c) Verbalized responses to problems with guiding questions. The initial scores obtained by marking the verbalized responses to the social studies problems with guiding questions, and the significance of the difference in scores, as found by means of the t-test, are given in Table III.

It will be noted from Table III that the t-values were 0.0106 and 1.451 indicating no significant difference between the groups of high achievers, or the groups of low achievers, on the basis of verbalized responses to problems with guiding questions.

d) Verbalized responses to a problem without guiding questions. February scores to the problem of a social studies type without guiding questions were obtained by marking the verbalized responses. The scores of the groups of high and low achievers from experimental and control classrooms and the significance of the differences in scores are given in Table IV.

The t-value of 0.4472 shown in Table IV indicated no significant difference between the groups of high achievers in February. However the t-value of 2.3763 indicated that the group of low achievers from the

TABLE III

VERBALIZED RESPONSES TO SOCIAL STUDIES PROBLEMS WITH GUIDING QUESTIONS, FEBRUARY 1958

HIGH EXPERIMENTAL		HIGH CONTROL			LOW EXPERIMENTAL		LOW CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EH 1	17	CH 1	18	- 1	EL 1	18	CL 1	10	+ 8
EH 2	16	CH 2	15	+ 1	EL 2	16	CL 2	7	+ 9
EH 3	19	CH 3	28	- 9	EL 3	11	CL 3	10	+ 1
EH 4	22	CH 4	17	+ 5	EL 4	9	CL 4	9	0
EH 5	21	CH 5	18	+ 3	EL 5	11	CL 5	10	+ 1
EH 6	12	CH 6	23	-11	EL 6	2	CL 6	4	- 2
EH 7	16	CH 7	18	- 2	EL 7	13	CL 7	7	+ 6
EH 8	20	CH 8	16	+ 4	EL 8	13	CL 8	17	- 4
EH 9	13	CH 9	14	- 1	EL 9	9	CL 9	8	+ 1
EH 10	6	CH 10	11	- 5	EL 10	8	CL 10	13	- 5
EH 11	9	CH 11	9	0	EL 11	10	CL 11	2	+ 8
EH 12	14	CH 12	9	+ 5	EL 12	6	CL 12	10	- 4
EH 13	11	CH 13	9	+ 2	EL 13	5	CL 13	7	- 2
EH 14	14	CH 14	11	+ 3	EL 14	11	CL 14	4	+ 7
EH 15	16	CH 15	13	+ 3	EL 15	4	CL 15	7	- 3
N=15		N=15			N=15		N=15		
Mean=15.067		Mean=15.267			Mean=8.933		Mean=8.333		
Var.=227.014		Var.=27.264			Var.=18.068		Var.=12.894		

Significance of difference in scores (t-test): non-significant. t=0.0106

Significance of difference in scores (t-test): non-significant. t=1.1451

TABLE IV

VERBALIZED RESPONSES TO A PROBLEM OF THE SOCIAL STUDIES TYPE WITHOUT GUIDING QUESTIONS, FEBRUARY 1958

HIGH EXPERIMENTAL		HIGH CONTROL			LOW EXPERIMENTAL		LOW CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EH 1	6	CH 1	4	+ 2	EL 1	7	CL 1	6	+ 1
EH 2	8	CH 2	7	+ 1	EL 2	2	CL 2	7	- 5
EH 3	5	CH 3	6	- 1	EL 3	2	CL 3	8	- 6
EH 4	6	CH 4	4	+ 2	EL 4	5	CL 4	4	+ 1
EH 5	8	CH 5	7	+ 1	EL 5	1	CL 5	5	- 4
EH 6	5	CH 6	7	- 2	EL 6	0	CL 6	0	0
EH 7	4	CH 7	4	0	EL 7	5	CL 7	5	0
EH 8	5	CH 8	7	- 2	EL 8	2	CL 8	5	- 3
EH 9	3	CH 9	2	+ 1	EL 9	3	CL 9	7	- 4
EH 10	4	CH 10	3	+ 1	EL 10	3	CL 10	3	0
EH 11	4	CH 11	8	- 4	EL 11	1	CL 11	4	- 3
EH 12	8	CH 12	3	+ 5	EL 12	2	CL 12	0	+ 2
EH 13	5	CH 13	2	+ 3	EL 13	1	CL 13	0	+ 1
EH 14	4	CH 14	5	- 1	EL 14	0	CL 14	0	0
EH 15	5	CH 15	7	- 2	EL 15	0	CL 15	4	- 4
N=15		N=15			N=15		N=15		
Mean=5.333		Mean=5.067			Mean=2.267		Mean=3.867		
Var.=2.349		Var.=5.259			Var.=3.928		Var.=7.046		

Significance of difference in scores (t-test): non-significant. t=0.4472

Significance of difference in scores (t-test): significant. t=2.3763

control schools were significantly better than the low group from the experimental schools in the ability to use social studies reading skills as shown by verbalized responses to a problem without guiding questions.

On the basis of the February scores there was no significant difference between the groups of high and low achievers in parts (a), (b), (c) of this first hypothesis. Also, there was no significant difference between the two groups of high achievers in part (d), verbalized responses to problems of the social studies type without guiding questions. However, the group of low achievers from the control schools were significantly better than the low achievers from the experimental schools in this respect.

THE SECOND HYPOTHESIS

The scores from the S.T.E.P. test of social studies will be analyzed in the light of the second hypothesis. The second hypothesis stated that the groups of high and low achievers from the experimental schools would show a greater improvement than the groups of high and low achievers from the control schools in the use of social studies reading skills as shown by the results of the S.T.E.P. test of social studies.

i) The groups of high achievers from the experimental and control classrooms. The June scores were tabulated. The differences between the June scores, the improvement made by pupils from the experimental and control classrooms, and the differences in improvement were calculated. The t-test and the sign test were used upon these calculations. The results are given in Table V.

TABLE V

S.T.E.P. TEST OF SOCIAL STUDIES FINAL SCORES, IMPROVEMENT, AND DIFFERENCE IN IMPROVEMENT HIGH ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
HIGH EXPERIMENTAL		HIGH CONTROL			HIGH EXPERIMENTAL		HIGH CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EH 1	64	CH 1	62	+ 2	EH 1	+12	CH 1	+ 1	+11
EH 2	61	CH 2	65	- 4	EH 2	+11	CH 2	+ 2	+ 9
EH 3	65	CH 3	60	+ 5	EH 3	+ 7	CH 3	- 2	+ 9
EH 4	65	CH 4	62	+ 3	EH 4	+ 4	CH 4	+12	- 8
EH 5	67	CH 5	55	+12	EH 5	+ 7	CH 5	- 3	+10
EH 6	65	CH 6	59	+ 6	EH 6	0	CH 6	+ 1	- 1
EH 7	59	CH 7	51	+ 8	EH 7	+12	CH 7	- 2	+14
EH 8	59	CH 8	63	- 4	EH 8	- 2	CH 8	+ 2	- 4
EH 9	58	CH 9	61	- 3	EH 9	+ 2	CH 9	+ 2	0
EH 10	59	CH 10	50	+ 9	EH 10	+ 6	CH 10	+ 5	+ 1
EH 11	52	CH 11	45	+ 7	EH 11	+10	CH 11	+ 4	+ 6
EH 12	55	CH 12	54	+ 1	EH 12	+ 4	CH 12	+15	-11
EH 13	42	CH 13	45	- 3	EH 13	0	CH 13	+ 1	- 1
EH 14	53	CH 14	41	+12	EH 14	+ 8	CH 14	+ 3	+ 5
EH 15	--	CH 15	--	--	EH 15	--	CH 15	--	--
N=14		N=14			N=14		N=14		
Mean=58.857		Mean=55.214			Significance of difference in June scores (t-test): non-significant. t=0.2356				
Var.=41.929		Var.=56.927			Significance of amount of improvement February to June, High Experimental (t-test): significant at .01 level. t=4.667				

Significance of amount of improvement February to June, High Control (t-test): significant at .05 level. t=2.173

Significance of difference in improvement (sign test): non-significant. Probability=0.213

The t-value of 0.2356 indicated that there was no significant difference between the scores of the groups of high achievers from the experimental and control classrooms on the basis of June scores on the S.T.E.P. test of social studies. The group from the experimental schools, however, showed a highly significant amount of improvement from February to June with a t-value of 4.677, while the amount of improvement shown by the group from the control schools with a t-value of 2.173 was significant at the .05 level, a lower level. Thus, though the scores of the two groups of high achievers were not significantly different in February or in June, there was a greater amount of improvement shown by the group from the experimental schools. The sign test was used to test the difference in the improvement shown by members of the pairs from the experimental and control classrooms. The probability of 0.213 indicated that the difference in improvement was non-significant.

The level of significance of the amount of improvement in the use of social studies reading skills as shown by the results of the S.T.E.P. test of social studies was higher for the group of high achievers from the experimental schools. However, the final scores of the groups from experimental and control classrooms were not significantly different, and the difference in improvement of the two groups from February to June was not significant.

ii) <u>The groups of low achievers from the experimental and control classrooms</u>. The t-test and the sign test were used upon the scores of the S.T.E.P. test of social studies of the groups of high and low achievers from experimental and control classrooms. Table VI gives the June scores,

TABLE VI

S.T.E.P. TEST OF SOCIAL STUDIES FINAL SCORES, IMPROVEMENT, AND DIFFERENCE IN IMPROVEMENT. LOW ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
LOW EXPERIMENTAL		LOW CONTROL			LOW EXPERIMENTAL		LOW CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EL 1	52	CL 1	45	+ 7	EL 1	+ 1	CL 1	+22	-21
EL 2	24	CL 2	57	-33	EL 2	+ 1	CL 2	+ 4	- 3
EL 3	48	CL 3	42	+ 6	EL 3	+ 8	CL 3	+ 4	+ 4
EL 4	46	CL 4	36	+10	EL 4	+ 3	CL 4	+ 9	- 6
EL 5	32	CL 5	48	-16	EL 5	+ 2	CL 5	+ 7	- 5
EL 6	40	CL 6	29	+11	EL 6	+14	CL 6	0	+14
EL 7	25	CL 7	34	- 9	EL 7	- 2	CL 7	0	- 2
EL 8	34	CL 8	40	- 6	EL 8	+ 9	CL 8	+ 2	+ 7
EL 9	33	CL 9	40	- 7	EL 9	+ 1	CL 9	+ 9	- 8
EL 10	57	CL 10	39	+18	EL 10	+25	CL 10	- 5	+30
EL 11	28	CL 11	28	0	EL 11	+ 1	CL 11	0	+ 1
EL 12	30	CL 12	18	+12	EL 12	0	CL 12	+ 4	- 4
EL 13	27	CL 13	35	- 8	EL 13	+14	CL 13	+15	- 1
EL 14	20	CL 14	34	-14	EL 14	+ 1	CL 14	0	+ 1
EL 15	--	CL 15	--	--	EL 15	--	CL 15	--	--
N=14		N=14			N=14		N=14		
Mean=35.429		Mean=36.429							
Var.=120.144		Var.=104.998							

Significance of difference of June scores (t-test): non-significant. t=0.561

Significance of amount of improvement, February to June, Low Experimental (t-test): significant at .02 level. t=2.746

Significance of amount of improvement, February to June, Low Control (t-test): significant at the .02 level. t=2.711

Significance of difference in improvement (sign test): non-significant. Probability=0.910

the differences between the June scores, the improvement from February to June of each group, and the differences in improvement.

On the basis of the June scores on the S.T.E.P. test of social studies there was no significant difference between the groups of low achievers from experimental and control classrooms. The t-value of 0.561 shown in Table VI indicated that the difference was non-significant. Both the amount of improvement shown by the group from the experimental classrooms and the amount of improvement shown by the group from the control classrooms were significant at the .02 level. The t-values were 2.746 and 2.711 respectively. Also, when the sign test was used to test the difference in the improvement of the paired groups the probability was found to be 0.910, indicating no significant difference in the improvement of the two groups.

Both groups were found to have made a significant amount of improvement from February to June in the ability to use social studies reading skills as shown by the results of the S.T.E.P. test of social studies. However, neither the difference in final scores, nor the difference in the improvement of the groups of low achievers was found to be significant.

THE THIRD HYPOTHESIS

The third hypothesis stated that the groups of high and low achievers from the experimental schools would also show a greater improvement in the following ways:

a) verbalized responses to problems from the S.T.E.P. test of social studies and by

b) verbalized responses to social studies reading problems with guiding questions.

This hypothesis will be discussed on the basis of the difference found between the scores of the groups from the experimental and control classrooms.

a) Verbalized responses to problems from the S.T.E.P. test of social studies.

i) The groups of high achievers from the experimental and control classrooms. The June scores were obtained from the protocols containing the verbalized responses to problems from the S.T.E.P. test of social studies. The June scores, the differences between the June scores of the pairs from experimental and control classrooms, the improvement made by the pupils of each group from February to June, and the differences in improvement were calculated. The results of these calculations and of the use of the t-test and sign test upon the calculations are given in Table VII.

The t-value of 3.272 indicated that the high achievers from the experimental schools were superior to those from the control schools, in June, on the basis of the verbalized responses to problems selected from the S.T.E.P. test of social studies. The difference was significant at the .01 level. Furthermore, the group from the experimental schools made a highly significant amount of improvement, from February to June. The t-value was 3.886. Meanwhile, the mean of the groups from the control schools dropped slightly, from 52.467 to 49.929. The t-value of 0.2907 did not indicate a significant amount of change. When the sign test was

TABLE VII

VERBALIZED RESPONSES TO CERTAIN PROBLEMS FROM THE S.T.E.P. TEST OF SOCIAL STUDIES

FINAL SCORES, IMPROVEMENT AND DIFFERENCE IN IMPROVEMENT. HIGH ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
HIGH EXPERIMENTAL		HIGH CONTROL			HIGH EXPERIMENTAL		HIGH CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EH 1	79	CH 1	67	+12	EH 1	+10	CH 1	0	+10
EH 2	59	CH 2	73	-14	EH 2	+19	CH 2	+ 7	+12
EH 3	68	CH 3	48	+20	EH 3	+34	CH 3	-14	+48
EH 4	82	CH 4	58	+24	EH 4	+ 8	CH 4	+22	-14
EH 5	79	CH 5	55	+24	EH 5	- 6	CH 5	-18	+12
EH 6	61	CH 6	54	+ 7	EH 6	+ 7	CH 6	-19	+26
EH 7	67	CH 7	36	+31	EH 7	+44	CH 7	-10	+54
EH 8	54	CH 8	70	-16	EH 8	+ 5	CH 8	- 7	+12
EH 9	54	CH 9	42	+12	EH 9	+10	CH 9	-15	+25
EH 10	76	CH 10	31	+45	EH 10	+33	CH 10	+ 1	+32
EH 11	64	CH 11	49	+15	EH 11	+29	CH 11	+11	+18
EH 12	69	CH 12	55	+14	EH 12	+45	CH 12	+29	+16
EH 13	33	CH 13	32	+ 1	EH 13	-10	CH 13	- 6	- 4
EH 14	62	CH 14	29	+33	EH 14	+25	CH 14	+ 3	+22
EH 15	--	CH 15	--	--	EH 15	--	CH 15	--	--
N=14		N=14			N=14		N=14		
Mean=64.786		Mean=49.929							
Var.=139.327		Var.=369.955							

Significance of difference of June scores (t-test): significant at the .05 level. t=3.272

Significance of amount of improvement, February to June, High Experimental (t-test): significant at the .01 level. t=3.886

Significance of amount of improvement, February to June, High Control (t-test): non-significant. t=0.2907

Significance of difference in improvement (sign test): significant at the .01 level. Probability=0.006

used to test the significance of the difference in the improvement of the paired group the probability was found to be 0.006, indicating a highly significant difference in improvement. Thus, the statistical analysis revealed that the group of high achievers from the experimental classrooms had made a highly significant improvement in the use of social studies reading skills as shown by verbalized responses to problems selected from the S.T.E.P. test of social studies.

ii) The groups of low achievers from the experimental and control classrooms. The t-test and the sign test were used on the scores the three markers obtained by marking the June responses of the problems selected from the S.T.E.P. test of social studies. Table VIII gives the June scores, the differences between the June scores of the pairs from the experimental and control classrooms, the improvement made by the pupils of each group, the differences in improvement, and the results of the use of the t-test and the sign test.

The t-value of 0.808 shown in Table VIII indicated no significant difference between the final scores of the two groups. However, the group of low achievers from the experimental classrooms made a somewhat greater amount of improvement than the group from the control classrooms. The t-value of 2.1417 indicated that the amount of improvement shown by the group from the experimental schools was approaching significance, whereas the amount of improvement shown by the pupils from the control classrooms was non-significant. The t-value was 0.768. However, the sign test revealed that the difference in the improvement of the two groups was non-significant. Although the amount of improvement shown by the low

TABLE VIII

VERBALIZED RESPONSES TO CERTAIN PROBLEMS FROM THE S.T.E.P. TEST OF SOCIAL STUDIES

FINAL SCORES, IMPROVEMENT AND DIFFERENCE IN IMPROVEMENT. LOW ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
LOW EXPERIMENTAL		LOW CONTROL			LOW EXPERIMENTAL		LOW CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EL 1	82	CL 1	28	+54	EL 1	+26	CL 1	- 3	+29
EL 2	8	CL 2	70	-62	EL 2	- 6	CL 2	+26	-32
EL 3	36	CL 3	41	- 5	EL 3	+ 3	CL 3	+21	-18
EL 4	66	CL 4	32	+34	EL 4	+48	CL 4	+13	+35
EL 5	32	CL 5	34	- 2	EL 5	+ 6	CL 5	-13	+19
EL 6	29	CL 6	9	+20	EL 6	+11	CL 6	- 3	+14
EL 7	11	CL 7	23	-12	EL 7	- 4	CL 7	+ 1	- 5
EL 8	30	CL 8	25	+ 5	EL 8	0	CL 8	-13	+13
EL 9	15	CL 9	23	- 8	EL 9	- 3	CL 9	+12	-15
EL 10	72	CL 10	24	+48	EL 10	+32	CL 10	0	+32
EL 11	11	CL 11	9	+ 2	EL 11	+ 2	CL 11	+ 2	0
EL 12	15	CL 12	13	+ 2	EL 12	- 5	CL 12	+ 9	-14
EL 13	9	CL 13	13	- 4	EL 13	+ 6	CL 13	- 9	+15
EL 14	15	CL 14	3	+12	EL 14	+11	CL 14	- 8	+19
EL 15	--	CL 15	--	--	EL 15	--	CL 15	--	--
N=14		N=14			N=14		N=14		
Mean 30.786		Mean 24.786			Significance of difference in June scores (t-test): non-significant. t=0.808				
Var. 579.619		Var. 265.313							

Significance of amount of improvement, February to June, Low Experimental (t-test): approaching significance. t=2.1417

Significance of amount of improvement, February to June, Low Control (t-test): non-significant. t=0.768

Significance of difference in improvement (sign test): non-significant. Probability=0.213

achievers from the experimental schools was greater than the amount of improvement shown by the low achievers from the control schools, the difference in improvement in the ability to use social studies reading skills as shown by the verbalized responses to problems selected from the S.T.E.P. test of social studies was not found to be statistically significant.

b) Verbalized responses to social studies reading problems with guiding questions.

i) The groups of high achievers from the experimental and control classrooms. The verbalized responses of the two groups of high achievers to the constructed and adapted social studies reading problems with guiding questions were marked as objectively as possible by the three markers. The final scores were tabulated, differences calculated, and the t-test and sign test applied in the manner used with the scores from the S.T.E.P. test of social studies and the verbalized responses to problems selected from the S.T.E.P. test of social studies. The results are given in Table IX.

As can be seen from Table IX, the final scores of the group of high achievers from the experimental schools were significantly higher than the final scores of the group from the control schools. The t-value was 2.222. The amount of improvement shown by the group from the experimental schools was highly significant. The t-value was 3.182. On the other hand, the final mean of the group from the control schools, 14.357, was slightly but not significantly lower than the initial mean, 15.267, shown in Table III. The t-value for the difference of initial

TABLE IX

VERBALIZED RESPONSES TO SOCIAL STUDIES PROBLEMS WITH GUIDING QUESTIONS

FINAL SCORES, IMPROVEMENT AND DIFFERENCE IN IMPROVEMENT HIGH ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
HIGH EXPERIMENTAL		HIGH CONTROL			HIGH EXPERIMENTAL		HIGH CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EH 1	20	CH 1	20	0	EH 1	+ 3	CH 1	+ 2	+ 1
EH 2	16	CH 2	21	- 5	EH 2	0	CH 2	+ 6	- 6
EH 3	26	CH 3	17	+ 9	EH 3	+ 7	CH 3	-11	+18
EH 4	24	CH 4	17	+ 7	EH 4	+ 2	CH 4	0	+ 2
EH 5	21	CH 5	13	+ 8	EH 5	0	CH 5	- 5	+ 5
EH 6	18	CH 6	16	+ 2	EH 6	+ 6	CH 6	- 7	+13
EH 7	16	CH 7	18	- 2	EH 7	0	CH 7	0	0
EH 8	27	CH 8	28	- 1	EH 8	+ 7	CH 8	+12	- 5
EH 9	9	CH 9	15	- 6	EH 9	- 4	CH 9	+ 1	- 5
EH 10	21	CH 10	14	+ 7	EH 10	+15	CH 10	+ 3	+12
EH 11	18	CH 11	6	+12	EH 11	+ 9	CH 11	- 3	+12
EH 12	17	CH 12	4	+13	EH 12	+ 3	CH 12	- 5	+ 8
EH 13	16	CH 13	9	+ 7	EH 13	+ 5	CH 13	0	+ 5
EH 14	17	CH 14	3	+14	EH 14	+ 3	CH 14	- 8	+11
EH 15	--	CH 15	--	--	EH 15	--	CH 15	--	--
N=14		N=14			N=14		N=14		
Mean 19.000		Mean 14.357							
Var. 20.286		Var. 44.862							

Significance of difference of June scores (t-test): significant at the .05 level. t=2.222

Significance of amount of improvement, February to June, High Experimental (t-test): significant at the .01 level. t=3.182

Significance of amount of improvement, February to June, High Control (t-test): non-significant. t=0.2907

Significance of difference in amount of improvement (sign test): significant at the .05 level. Probability=0.046

and final scores of the group from the control schools was 0.2907. When the difference in the improvement shown by the two groups was analyzed by means of the sign test the statistical probability was found to be 0.046 indicating that the difference was significant. The use of the t-test and the sign test revealed that the high achievers from the experimental classrooms made significantly greater improvement in the use of social studies reading skills as shown by verbalized responses to social studies reading problems with guiding questions.

ii) The groups of the low achievers from the experimental and control classrooms. The June scores of the two groups of low achievers were obtained by marking their verbalized responses to social studies reading problems with guiding questions. Tabulations and calculations were made as with the previous June scores. The t-test and sign test were used upon them. The results are shown in Table X.

As can be seen from Table X there was no significant difference between the June scores of the two groups of low achievers. Yet, according to the t-test the amount of improvement shown by the group from the control schools was highly significant with a t-value of 3.0782, whereas the amount of improvement shown by the group from the experimental schools was only approaching significance with a t-value of 2.121. However, the initial and final means, 8.933 and 11.818 respectively for the group from the experimental schools, and 8.333 and 10.857 respectively for the group from the control schools do not indicate that the group of low achievers from the control schools had made a greater amount of improvement. It is likely that the larger t-value was caused by the

TABLE X

VERBALIZED RESPONSES TO SOCIAL STUDIES PROBLEMS WITH GUIDING QUESTIONS

FINAL SCORES, IMPROVEMENT AND DIFFERENCE IN IMPROVEMENT LOW ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
LOW EXPERIMENTAL		LOW CONTROL			LOW EXPERIMENTAL		LOW CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EL 1	16	CL 1	11	+ 5	EL 1	- 2	CL 1	+ 1	- 3
EL 2	9	CL 2	17	- 8	EL 2	+ 3	CL 2	+10	- 7
EL 3	14	CL 3	14	0	EL 3		CL 3		
EL 4	14	CL 4	10	+ 4	EL 4	+ 5	CL 4	+ 1	+ 4
EL 5	17	CL 5	14	+ 3	EL 5	+ 6	CL 5	+ 4	+ 2
EL 6	12	CL 6	9	+ 3	EL 6	+10	CL 6	+ 5	+ 5
EL 7	14	CL 7	8	+ 6	EL 7	+ 1	CL 7	+ 1	0
EL 8		CL 8	15		EL 8		CL 8	- 2	
EL 9	7	CL 9	11	- 4	EL 9	- 2	CL 9	+ 3	- 5
EL 10	19	CL 10	13	+ 6	EL 10	+11	CL 10	0	+11
EL 11	7	CL 11	5	+ 2	EL 11	- 3	CL 11	+ 3	- 6
EL 12	9	CL 12	9	0	EL 12	+ 3	CL 12	- 1	+ 4
EL 13	6	CL 13	10	- 4	EL 13	+ 1	CL 13	+ 3	- 2
EL 14		CL 14	6		EL 14		CL 14	+ 2	
EL 15		CL 15		--	EL 15		CL 15		--
N=11		N=14			N=11		N=14		N=11
Mean 11.818		Mean 10.857							
Var. 18.290		Var. 10.918							

Significance of difference of June scores (t-test): non-significant. t=0.844

Significance of amount of improvement, February to June, Low Experimental (t-test): approaching significance. t=2.121

Significance of amount of improvement, February to June, Low Control (t-test): significant at the .01 level. t=3.0782

Significance of difference in improvement (sign test): non-significant.

smaller variances of the groups from the control schools. The initial and final variances were 18.068 and 18.290 respectively, and 12.894 and 10.857 respectively for the groups from the experimental and control schools. Moreover, the sign test revealed no significant difference between the improvement shown by the low achievers from the experimental classrooms and the improvement shown by the low achievers from the control classrooms.

The statistical analysis of the final scores and differences between initial and final scores revealed that the group of high achievers from the experimental schools made significantly greater improvement in the use of social studies reading skills as shown by verbalized responses to problems selected from the S.T.E.P. test of social studies and to social studies reading problems with guiding questions. However the difference in improvement between the low achievers from experimental and control classrooms was not significant.

THE FOURTH HYPOTHESIS

The fourth hypothesis will be discussed on the basis of the differences found between the scores of the groups of high and low achievers from experimental and control classrooms. To obtain the scores the verbalized responses to the problem were marked by three markers working independently. The fourth hypothesis stated that there would be a transfer of the improvement in the ability to use social studies reading skills to problems of a social studies reading type without guiding questions so that the groups of high and low achievers

from the experimental schools would show a greater ability to solve such problems than the groups of high and low achievers from the control schools. This improvement would be shown by verbalized responses to a problem of the social studies type without guiding questions.

i) The groups of high and low achievers from the experimental and control classrooms. The June scores of the two groups of high achievers were tabulated. Calculations were made to find the differences between the June scores, the differences between February and June scores for each group, and the differences between the improvement of the pairs from the two groups. Again, the t-test and the sign test were used. Table XI gives the results.

The final scores of the groups of high achievers from the experimental schools were significantly higher than the final scores of the groups from the control schools. The t-value was 3.157, indicating that the difference was highly significant. The difference in final scores is in agreement with the improvement shown by each group. The amount of difference between February and June scores of the group from the experimental schools was calculated to be zero. However the June scores of the group from the control schools were found to be lower than the February scores and the difference was found to be highly significant with a t-value of 3.7319. The mean scores given in Tables IV and XI are of interest. The initial and final means for the group from the experimental schools are 5.333 and 5.357. The corresponding means for the group from the control schools are 5.067 and 2.929.

Apparently, the pupils found the problem used in June more dif-

TABLE XI

VERBALIZED RESPONSES TO A PROBLEM OF THE SOCIAL STUDIES TYPE WITHOUT GUIDING QUESTIONS

FINAL SCORES, IMPROVEMENT AND DIFFERENCE IN IMPROVEMENT HIGH ACHIEVERS

JUNE SCORES					IMPROVEMENT FEB. TO JUNE				
HIGH EXPERIMENTAL		HIGH CONTROL			HIGH EXPERIMENTAL		HIGH CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EH 1	5	CH 1	8	- 3	EH 1	- 1	CH 1	+ 4	- 5
EH 2	5	CH 2	2	+ 3	EH 2	- 3	CH 2	- 5	+ 2
EH 3	6	CH 3	3	+ 3	EH 3	+ 1	CH 3	- 3	+ 4
EH 4	7	CH 4	1	+ 6	EH 4	+ 1	CH 4	- 3	+ 4
EH 5	8	CH 5	3	+ 5	EH 5	0	CH 5	- 4	+ 4
EH 6	7	CH 6	7	0	EH 6	+ 2	CH 6	0	+ 2
EH 7	2	CH 7	1	+ 1	EH 7	- 2	CH 7	- 3	+ 1
EH 8	8	CH 8	4	+ 4	EH 8	+ 3	CH 8	- 3	+ 6
EH 9	3	CH 9	5	- 2	EH 9	0	CH 9	- 3	+ 3
EH 10	6	CH 10	1	+ 5	EH 10	+ 2	CH 10	- 2	+ 4
EH 11	6	CH 11	2	+ 4	EH 11	+ 2	CH 11	- 6	+ 8
EH 12	8	CH 12	2	+ 6	EH 12	0	CH 12	- 1	+ 1
EH 13	3	CH 13	1	+ 2	EH 13	- 2	CH 13	- 1	- 1
EH 14	1	CH 14	1	0	EH 14	- 3	CH 14	- 4	+ 1
EH 15	--	CH 15	--	--	EH 15	--	CH 15	--	--
N=14		N=14			N=14		N=14		
Mean 5.357		Mean 2.929							
Var. 4.944		Var. 4.987							

Significance of difference of June scores (t-test): significant at the .01 level. t=3.157
Significance of amount of improvement, February to June, High Experimental (t-test): non-significant.
Significance of amount of improvement, February to June, High Control (t-test): significant at the .01 level. June mean lower.
Significance of difference in improvement (sign test): significant at more than the .01 level. Probability=0.006.

ficult than the initial problem. The initial and final problems are to be found in the appendix. They appear to require the use of the same skills but the pupils may have found the data in the problem used in February more familiar than the data in the June problem.

To investigate further the differences in performance of the two groups the sign test was used to find the significance of the difference between the relative performance of each group from February to June. The statistical probability of 0.006 indicated a highly significant difference in performance, in favour of the group from the experimental schools. Thus, the results from the t-test and from the sign test revealed that the high achievers from the experimental schools had made a highly significant improvement in the ability to solve a problem of the social studies type without guiding questions.

ii) The groups of low achievers from experimental and control classrooms. The final scores for the two groups of low achievers were obtained, and tabulations and calculations made in the same manner as for the two groups of high achievers. The t-test and sign test were used upon the scores. The results are given in Table XII.

It will be noted that the t-value for the difference in final scores for the two groups of low achievers was 2.427. This indicated a significant difference between the two groups. The February and June means were found to be of interest in the analysis of the amount of improvement from February to June. The June mean of the low achievers from the experimental schools was 3.496, slightly higher than the February mean 2.267. However, the June mean of the low achievers from

TABLE XII

VERBALIZED RESPONSES TO A PROBLEM OF THE SOCIAL STUDIES TYPE WITHOUT GUIDING QUESTIONS

FINAL SCORES, IMPROVEMENT AND DIFFERENCE IN IMPROVEMENT LOW ACHIEVERS

JUNE SCORES

LOW EXPERIMENTAL		LOW CONTROL			LOW EXPERIMENTAL		LOW CONTROL		
Pupil	Score	Pupil	Score	Difference	Pupil	Score	Pupil	Score	Difference
EL 1	3	CL 1	5	- 2	EL 1	- 4	CL 1	- 1	- 3
EL 2	4	CL 2	1	+ 3	EL 2	+ 2	CL 2	- 6	+ 8
EL 3	6	CL 3	3	+ 3	EL 3	+ 4	CL 3	- 5	+ 9
EL 4	4	CL 4	2	+ 2	EL 4	- 1	CL 4	- 2	+ 1
EL 5	4	CL 5	5	- 1	EL 5	+ 3	CL 5	0	+ 3
EL 6	2	CL 6	0	+ 2	EL 6	+ 2	CL 6	0	+ 2
EL 7	1	CL 7	0	+ 1	EL 7	- 4	CL 7	- 5	+ 1
EL 8	4	CL 8	4	0	EL 8	+ 2	CL 8	- 1	+ 3
EL 9	1	CL 9	4	- 3	EL 9	- 2	CL 9	- 3	+ 1
EL 10	7	CL 10	1	+ 6	EL 10	+ 4	CL 10	- 2	+ 6
EL 11	4	CL 11	3	+ 1	EL 11	+ 3	CL 11	- 1	+ 4
EL 12	1	CL 12	0	+ 1	EL 12	- 1	CL 12	0	- 1
EL 13	5	CL 13	1	+ 4	EL 13	+ 4	CL 13	+ 1	+ 3
EL 14	1	CL 14	0	+ 1	EL 14	+ 1	CL 14	0	+ 1
EL 15	-	CL 15	-	-	EL 15	-	CL 15	-	-
N=14		N=14			N=14		N=14		
Mean 3.357		Mean 2.071							
Var. 3.496		Var. 3.358							

Significance of difference of June scores (t-test): significant at the .05 level. t=2.427

Significance of amount of improvement, February to June, Low Experimental (t-test): Non-significant. t=1.229

Significance of amount of improvement, February to June, Low Control (t-test): significant at the .01 level. June mean lower.

Significance of difference in improvement (sign test): significant at more than the .01 level.

the control schools, 2.071, was lower than the February mean, 3.867. Apparently the low achievers, like the high achievers, found the June problem more difficult than the February problem. The amount of improvement shown by the scores of the group from the experimental schools was non-significant. However, the scores of the group from the control schools indicated a highly significant downward change. The significance of the difference in performance of the two groups from February to June was investigated by the sign test. The probability of .006 indicated a highly significant difference between the final performance of the pupils from the experimental schools, relative to their initial performance and the final performance of the pupils from the control schools relative to their initial performance. Thus, the low achievers from the experimental schools revealed a greater improvement in the ability to solve a problem of the social studies type without guiding questions.

SUMMARY OF THE STATISTICAL FINDINGS

The results of the use of the t-test and sign test for the differences in paired samples are summarized in five tables. In these tables abbreviations are used as follows:

H. A. - High Achievers L. A. - Low Achievers

E. H. - High Achievers from the experimental schools

C. H. - High Achievers from the control schools

E. L. - Low Achievers from the experimental schools

C. L. - Low Achievers from the control schools

S.T.E.P. scores - Scores from the S.T.E.P. test of social studies

V.R. S.T.E.P. Problems - Verbalized responses to problems selected from the S.T.E.P. test of social studies.

V.R.S.S. Problems - Verbalized responses to social studies problems with guiding questions.

V.R. Problems W.G.Q. - Verbalized responses to problems of the social studies type without guiding questions.

G.H.M. - Group obtaining higher mean.

TABLE XIII

DIFFERENCE IN FEBRUARY SCORES (T-TEST)

Groups	Type of Data	G. H. M.	t-value	Level of Significance
H. A.	S.T.E.P. Scores	E. H.	.1370	-
L. A.	S.T.E.P. Scores	C. L.	.6337	-
H. A.	V. R. S.T.E.P. Problems	C. H.	1.1353	-
L. A.	V. R. S.T.E.P. Problems	C. L.	.2196	-
H. A.	V. R. S. S. Problems	C. H.	.0106	-
L. A.	V. R. S. S. Problems	E. L.	1.1451	-
H. A.	V. R. Problems W. G. Q.	E. H.	.4472	-
L. A.	V. R. Problems W. G. Q.	C. L.	2.3763	.05

TABLE XIV

DIFFERENCES IN JUNE SCORES (T-TEST)

Groups	Type of Data	G. H. M.	t-value	Level of Significance
H. A.	S.T.E.P. Scores	E. H.	.2356	-
L. A.	S.T.E.P. Scores	C. L.	.561	-
H. A.	V. R. S.T.E.P. Problems	E. H.	3.272	.01
L. A.	V. R. S.T.E.P. Problems	E. L.	.808	-
H. A.	V. R. S. S. Problems	E. H.	2.222	.05
L. A.	V. R. S. S. Problems	E. L.	.844	-
H. A.	V. R. Problems W. G. Q.	E. H.	3.157	.01
L. A.	V. R. Problems W. G. Q.	E. L.	2.427	.05

TABLE XV

AMOUNT OF IMPROVEMENT FEBRUARY TO JUNE (T-TEST)

Groups	Type of Data	G. H. M.	t-value	Level of Significance
E. H.	S.T.E.P. Scores		4.677	.01
C. H.	S.T.E.P. Scores		2.173	.05
E. L.	S.T.E.P. Scores		2.746	.02
C. L.	S.T.E.P. Scores		2.711	.02
E. H.	V. R. S.T.E.P. Problems		3.886	.01
C. H.	V. R. S.T.E.P. Problems	A	.2907	
E. L.	V. R. S.T.E.P. Problems		2.1417	.10
C. L.	V. R. S.T.E.P. Problems		.768	
E. H.	V. R. S. S. Problems		3.182	.01
C. H.	V. R. S. S. Problems	A	.372	
E. L.	V. R. S. S. Problems		2.121	.10
C. L.	V. R. S. S. Problems		3.0782	.01
E. H.	V. R. Problems W. G. Q.		#	
C. H.	V. R. Problems W. G. Q.	A	3.7319	.01
E. L.	V. R. Problems W. G. Q.		1.229	
C. L.	V. R. Problems W. G. Q.	A	3.0542	.01

A February scores were higher than June scores.

Total improvement was calculated to be zero.

TABLE XVI

DIFFERENCE IN IMPROVEMENT FEBRUARY TO JUNE (SIGN TEST)

Groups	Type of Data	G. H. M.	Probability
H. A.	S.T.E.P. Scores	E. H.	.213
L. A.	S.T.E.P. Scores	C. L.	.910
H. A.	V. R. S.T.E.P. Problems	E. H.	.006
L. A.	V. R. S.T.E.P. Problems	E. L.	.213
H. A.	V. R. S. S. Problems	E. H.	.046
L. A.	V. R. S. S. Problems	----	---
H. A.	V. R. Problems W. G. Q.	E. H.	.006
L. A.	V. R. Problems W. G. Q.	E. L.	.006

SUMMARY

This chapter dealt with the statistical procedures used to test the four hypotheses.

Parts (a), (b), and (c) of the first hypothesis were supported by an analysis of the initial scores of the groups of high and low achievers from experimental and control classrooms. Part (d) was supported by an analysis of the initial scores of the high achievers. However, part (d) was not supported by the initial scores of the low achievers as the group of low achievers from the control schools was significantly better than the group of low achievers from the experimental schools in the ability to solve a problem of the social studies type without guiding questions.

The second hypothesis was not supported by the analysis of the scores of either the groups of high or the groups of low achievers.

Both parts of the third hypothesis were supported by the analysis of the scores of the groups of high achievers, but not by the analysis of the scores of the groups of low achievers.

The fourth hypothesis was supported by the analysis of the scores of the groups of high achievers and the analysis of the scores of the groups of low achievers.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This study was undertaken to investigate the effects of a program of intensive training in problem-solving upon the use of social studies reading skills by division two pupils. From February to June the University of Alberta conducted the program of training in problem-solving. Several hundred pupils in division two experimental and control classrooms were involved. From this larger University experiment in problem-solving a small number of pupils were selected for the investigation into the use of social studies reading skills. High and low achievers on the S.T.E.P. test of reading were selected from the experimental and control classrooms of the University of Alberta study. February and June scores from the S.T.E.P. test of social studies and from the marked protocols that contained the verbalized responses to selected and constructed social studies problems were obtained. The protocols were obtained through the use of the individual interview technique, and were marked by three markers working independently and using specially constructed check lists. Suitable statistical techniques were used to analyze the scores.

An examination of literature likely to assist this study was made. In various writings, particularly those of Russell, Fay, and Yoakam lists of reading skills needed in the social studies were found. These writers stressed the importance of reading skills for successful problem-solving. The reports of the investigations by Buswell and by Bloom and

Broder dealt with reading and problem-solving of college students. Dorothy Leggitt conducted a successful experiment in developing working skills, or reading skills, in ninth-grade civics. There was little evidence discovered of research dealing with the use of social studies reading skills by grades four, five, and six pupils.

This study used division two pupils and dealt mainly with the use of social studies reading skills rather than with scores made on standardized tests. To assist this study an investigation of the methods used by Artley, by Buswell, and by Bloom and Broder was made. Artley used standardized tests to investigate the relationship between general reading comprehension and social studies reading comprehension. He dealt with the achievement or scores of the pupils. Buswell, Bloom and Broder and other investigators used the interview technique to observe the thinking processes of adults or older students as they solved problems that had been selected or developed especially for their particular studies. This introspective technique was adapted for use with division two pupils.

For this investigation sixty pupils were selected from the larger University of Alberta study. All pupils taking part in the University study were given the S.T.E.P. tests of reading and social studies, forms 4A or 4B, in February and in June. The sixty pupils for the investigation into the use of social studies reading skills were selected on the basis of achievement on the S.T.E.P. test of reading. Five high and five low achievers were chosen from each of the three grades in the experimental and control classrooms. The pupils were paired on the basis

of their scores on the S.T.E.P. test of reading. In the period from February until June, when the final interviews took place, two pairs were lost from the study, leaving twenty-eight pairs.

The initial and final S.T.E.P. social studies scores for the pupils were obtained from the persons in charge of the University study. These scores revealed the effects of the program of intensive training in problem-solving upon the use of reading study skills as shown by the S.T.E.P. test of social studies.

Three types of problems were selected or constructed for use in the initial and final interviews to test growth in the ability to use social studies reading skills. From forms 4A and 4B of the S.T.E.P. test of social studies twenty-seven problems were selected. Two social studies problems with guiding questions and with equivalents for re-testing were developed. One dealing with enterprise research was constructed; the other was adapted from the Wrightstone Test of Critical Thinking in the Social Studies Grades Four, Five, and Six. These were the classroom type of social studies problem in which the pupil was required to formulate rather than select an answer. Finally, a problem of the social studies type without guiding questions, and with an equivalent for re-testing was constructed. Although the content of this problem was related to the social studies area, it was more concerned with a practical out-of-the-classroom situation.

The pupils were asked to "think aloud" as they solved the problems and their verbal responses were recorded in writing by the interviewer. The resulting protocols were marked by the investigator and two assistants

who worked independently and used a set of check lists devised to meet the requirements of the data.

The t-test and the sign test for differences in paired samples were used to test the hypotheses. The t-test was used to test the differences in the initial and in the final scores of the paired groups from experimental and control classrooms and the amount of improvement shown by each group. As an additional test of the difference in improvement between the groups from experimental and control classrooms, the sign test was used.

The first hypothesis stated that, at the beginning of the study, the groups of high and low achievers from the experimental schools would not show a significant difference from the groups of high and low achievers from the control classrooms in:

a) the use of reading study skills as shown by the S.T.E.P. test of social studies

b) verbalized responses to certain problems from the S.T.E.P. test of social studies

c) verbalized responses to problems with guiding questions

d) verbalized responses to problems without guiding questions.

As the pupils from the experimental and control classrooms had been selected on the basis of the fundamental skill, reading ability, it was important to the study that they be found, in February, to be not significantly different in the skills in which improvement was to be tested. The statistical analysis of the February scores supported parts (a), (b) and (c) of the hypothesis. Part (d) was supported by the scores of the groups of high achievers, but the low achievers from the control schools

were found to be significantly better, in this respect, than the low achievers from the experimental schools. It was considered fortunate, since the two groups were found to be different, that it was the scores of the group from the control schools that were higher.

The second hypothesis stated that the groups of high and low achievers from the experimental schools would show a greater improvement than the groups of high and low achievers from the control schools in the use of social studies reading skills as shown by the results of the S.T.E.P. test of social studies. An analysis of the differences between initial and final scores indicated that the high achievers from the experimental schools had made a greater amount of improvement; but the difference in improvement from February to June of the two groups was not found to be significant. Also, there was no significant difference in improvement shown by the two groups of low achievers.

By the third hypothesis, the groups of high and low achievers from the experimental schools were required to show a greater improvement in the following ways:

a) verbalized responses to problems from the S.T.E.P. test of social studies and

b) verbalized responses to social studies reading problems with guiding questions.

An analysis of the scores of the groups of high achievers supported both parts of this hypothesis but neither part was supported by an analysis of the scores of the groups of low achievers.

A transfer of improvement in the ability to use social studies reading skills to problems of a social studies type without guiding

questions so that the groups of high and low achievers from the experimental schools would show a greater ability to solve such problems than the groups of high and low achievers from the control schools was required by the fourth hypothesis. This hypothesis was supported by an analysis of the scores of both the groups of high achievers and the groups of low achievers.

Conclusions drawn from this Study

1. The extent to which reading skills can be applied to subject matter areas has long been questioned. Although the training conducted by the University of Alberta was carried on for only four months it resulted in a worthwhile improvement in the use of social studies reading skills, particularly by pupils at the upper level.

The second hypothesis, requiring the groups from the experimental schools to show greater improvement than the groups from the control schools in the use of social studies reading skills as shown by the S.T.E.P. test of social studies was not supported statistically, but the amount of improvement shown by the group of high achievers from the experimental schools was significant at a higher level than the amount of improvement shown by the high achievers from the control schools. The initial scores made by many of the high achievers were close to the possible score on the S.T.E.P. test of social studies. It may be that it was impossible for the high achievers from the experimental schools to show an improvement significantly greater than the improvement shown by the group from the control schools.

The analysis of the scores of the groups of high achievers

supported the third hypothesis which required the groups from the experimental classrooms to show greater improvement in the following ways:

a) verbalized responses to problems from the S.T.E.P. test of social studies and

b) verbalized responses to social studies reading problems with guiding questions.

Perhaps low achievers do not respond as readily to a program of intensive training. However, the training period investigated in this study was short. It appears likely that a program of intensive training, like that conducted by the University of Alberta, carried on for a longer period of time would produce significantly greater improvement in the use of reading skills by the low achievers, as well as the high achievers.

2. The fourth hypothesis stating that there would be a transfer of improvement in the ability to use social studies reading skills to problems of a social studies type without guiding questions was supported by an analysis of the scores of the high and the low achievers. This indicates that intensive training in the use of social studies reading skills will assist pupils in related areas where these skills may be applied. It is of interest to note that the group of low achievers from the experimental schools had not shown significantly greater improvement in the use of social studies reading skills on social studies problems with guiding questions. Probably the low achievers found the content of the social studies problems rather difficult, whereas the content of the problem of the social studies type was more within their experience. Consequently the improvement in the ability of the group from the experi-

mental schools to read intelligently became apparent in the short four month period.

3. Although no attempt, other than through the use of the check lists, was made to analyze the quality of the verbalized responses, it was obvious that the majority of the pupils used dubious problem-solving procedures. The check-lists required the pupils to read the problems intelligently, to evaluate information given, and to draw conclusions based on the data. The verbalized responses to problems from the standardized test revealed that the pupils selected answers by guessing if they were unable to use more intelligent means. In some cases the number of correct answers obtained by guessing was surprising. Often the pupils explained that they had guessed and in other instances it was evident from their verbal explanations that they had little understanding of the problem. Guessing could not be used as extensively to solve the problems with and without guiding questions. However, many pupils solved these problems on the basis of their personal feelings, or their imaginations, rather than by analyzing the information given. It is evident that verbalized responses can be analyzed to yield insight into the problem-solving processes of division two pupils.

4. Apparently, the interview technique can be used successfully with pupils of grades four, five and six. In this study the pupils received no previous training in verbalizing responses and only a brief orientation before they were asked to respond to the test problems. In most cases their responses were satisfactory.

5. Evidently, verbalized responses from interviews, as obtained in

this study, can be marked with a satisfactory degree of objectivity. Check lists were developed and used by three markers working independently. The disagreement among markers was satisfactorily low.

Educational Implications of the Study

This study found that a program of intensive training in problem-solving and study skills carried on for as short a period of time as four months will improve the use of social studies reading skills. It revealed that social studies reading skills may be learned, but that they are learned more easily, apparently, by those who make a high score on a standardized reading test. Also, it revealed that a program of training which will improve the use of social studies reading skills will also assist pupils to solve problems from related subject areas where these skills may be used. Educational implications may be drawn from this information.

1. The teaching techniques used by the teachers in the experimental schools of the University of Alberta study should be put into wider use. The training in problem-solving resulted in an improvement in ability to solve social studies problems intelligently. The improvement of the high achievers from the experimental classrooms, as revealed by verbalized responses to problems selected from the S.T.E.P. test of social studies, and to social studies problems with guiding questions, was highly significant. The improvement shown by the high achievers from the control schools was non-significant.

2. Apparently, a longer period of training is required to produce significant results with pupils who are low achievers on a standardized

reading test. The training period was only four months long. February and June mean scores were obtained that indicated that the low achievers from the experimental classrooms had made greater improvement although the differences in improvement were not statistically significant.

The February and June mean scores, obtained by marking the verbalized responses to problems selected from the S.T.E.P. test of social studies, of the low achievers from the experimental classrooms were 20.667 and 30.786. The pupils from the control classrooms had February and June mean scores of 21.600 and 24.786. The improvement shown by the group from the experimental schools was obviously greater.

By marking the verbalized responses of the low achievers from the experimental classrooms, to social studies problems with guiding questions, February and June mean scores of 8.933 and 11.818 were obtained. The pupils from the control classrooms had February and June mean scores of 8.333 and 10.857.

3. It appears that the techniques developed in the University study will assist pupils in several subject areas. The fourth hypothesis requiring the groups of high and low achievers from the experimental schools to show a greater ability to solve a problem of the social studies type without guiding questions was supported. This was a practical problem not a classroom-type social studies problem. It required the use of reading and problem-solving skills but its content was not taken from the social studies field. Improvement in ability to solve this type of problem would seem to indicate improvement in ability to solve certain problems in health, arithmetic, science, and some other subjects. The

differences in improvement between the high groups from experimental and control schools and between the low groups were highly significant.

Observations of the Writer

Impressions gained by the writer when he was marking the verbalized responses led him to make certain observations. These observations are based on the judgment of the writer rather than a systematic analysis of the verbalized responses.

1. Most division two pupils need to be taught to read problems carefully so that they have a clear understanding of what is required of them.

2. Most division two pupils need to be taught to read critically. They should have practice solving problems where they must select useful data, and where they must not make assumptions that are not justified by the data.

3. Many division two pupils need more training in reading maps and charts. As the verbalized responses were being marked it became evident that there was a great variation in the recognition of directions, land and water masses, and continents on maps, and in the ability to interpret chart legends.

4. Many division two pupils need training in reporting skills. When asked where they would get information for an enterprise report several pupils stated that they would ask the teacher or their parents. Only a rather small number clearly indicated that they would use more than one book or source of information. Several stated that they would organize the material but few indicated that they possessed the ability to organize. A few of the pupils stated that they would prepare an outline to help them

tell the report to the class but others said that they would read the report.

Limitations of the Study

The test and problems. At the beginning of this study certain assumptions were made. The validity of the conclusions and of the recommendations may be affected by these assumptions.

1. The S.T.E.P. test of social studies was assumed to be a valid measure of social studies reading skills. Several of the problems in this test require a considerable knowledge of American geography and history. However an attempt was made to avoid these problems when the selections for the interviews were made. Moreover, the publishers of the S.T.E.P. test assert that it is a test of the use of skills rather than a test of factual knowledge.

2. It was assumed that the problems with and without guiding questions were valid as measures of social studies reading skills. The writer felt that the problems were reasonably satisfactory. They provided a few opportunities to test the ability to recognize the limits of data and to investigate reporting skills. These skills applied in a very few instances to the problems from the S.T.E.P. test. Also, these problems required the pupil to formulate rather than select an answer. Two problems had guiding questions to assist the pupil and one did not. The writer felt that problems of these types may have advantages over standardized test problems for an investigation into the use of skills. Used with the interview technique they seem to permit the investigator to observe additional aspects of the

reading and thinking processes, or to probe more deeply into these processes. When the pupil must formulate an answer without the guidance of prepared answers, he is more likely to show his interpretation of the problem.

3. It was assumed that division two pupils would be able to verbalize reasons for their answers to the various problems, and that an analysis of the verbalized responses would reveal their ability to use social studies reading skill, and yield insights into their problem-solving methods. It is recognized that the thinking processes may be partly sub-vocal. It must also be stated that the pupils in this study were not trained to verbalize their thoughts. Nevertheless, the writer believes that the majority of the pupils were able to indicate their interpretation of the problems and their methods of selecting or formulating answers. The verbalized responses provide an opportunity for the investigator to observe the pupils' reading and thinking processes to a depth not possible with the scores from a standardized test.

4. This study was in the nature of a pilot investigation. It investigated the effects of a training period of four months duration. It is probable that more significant results particularly with the low achievers may be obtained from a training program carried on for a longer period of time.

The sample of pupils. The sample of pupils used in this study may further limit the conclusions and recommendations.

1. Sixty pupils, thirty from control classrooms and thirty from experimental classrooms were selected. Four pupils were lost from the

study so the conclusions were based upon the performance of twenty-eight experimental and twenty-eight control pupils. It is possible that with a larger number of pupils somewhat different results might be obtained.

2. The pupils were selected on the basis of the S.T.E.P. test of reading. It is possible that intelligence and personality factors might affect the results of the study.

Suggestions for Further Research

It appears that some suggestions for further research should be made.

1. An analysis of the quality of the verbalized responses of division two pupils to social studies reading problems is needed. Deeper insights into the methods of attack and the interpretative abilities of these pupils could be obtained.

2. A longer training period should be carried on and its effects investigated.

3. The effects of personality factors should be investigated.

4. Further research into the relationship between general reading ability and the ability to use social studies reading skills should be conducted.

5. The S.T.E.P. test of social studies was found suitable for this investigation. However, it appears that there should be developed a social studies test with informational content more applicable to Alberta division two pupils, and with a ceiling high enough for the high achievers in grade six.

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APPENDIX A

Form 4 A

Catalog No. 704-01-1

Cooperative

Sequential Tests of Educational Progress

Social Studies

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ETS Cooperative Test Division · Educational Testing Service · Princeton, N. J. · Los Angeles 27, Calif.

General Directions

This is a test of some of the understandings, skills, and abilities you have been developing ever since you first entered school. You should take the test in the same way that you would work on any new and interesting assignment. Here are a few suggestions which will help you to earn your best score:

1. Make sure you understand the test directions before you begin working. You may ask questions about any part of the directions you do not understand.
2. You will make your best score by answering *every* question because your score is the number of correct answers you mark. Therefore, you should work carefully but not spend too much time on any one question. If a question seems to be too difficult, make the most careful guess you can, rather than waste time puzzling over it.
3. If you finish before time is called, go back and spend more time on those questions about which you were most doubtful.

DIRECTIONS FOR PART ONE

Each of the questions or incomplete statements in this test is followed by four suggested answers. You are to decide which one of these answers you should choose.

You must mark all of your answers on the separate answer sheet you have been given; this test booklet should not be marked in any way. You must mark your answer sheet by blackening the space having the same letter as the answer you have chosen. For example:

0 Which one of the following is an animal?

A Bed
B Dog
C Chair
D Box

Since a dog is an animal, you should choose the answer lettered **B**. On your answer sheet, you would first find the row of spaces numbered the same as the question—in the example above, it is **0**. Then you would blacken the space in this row which has the same letter as the answer you have chosen. See how the example has been marked on your answer sheet.

Make your answer marks heavy and black. Mark only one answer for each question. If you change your mind about an answer, be sure to erase the first mark completely.

Do not turn this page until you are told to do so.

PART ONE

This is a picture of part of a grocery store in Ohio.

1 Which food was raised on a farm somewhere in our country?

A Tea B Apples
C Cocoa D Coffee

2 What food probably came from a farm nearest the store?

E Eggs F Pineapples
G Olives H Lemons

3 Which of these was most likely used in bringing milk to the store?

A Truck B Train
C Airplane D Boat

4 What food most likely traveled part of the way to the store by boat?

E Oranges F Peas
G Bananas H Celery

5 Which food most likely traveled far to reach the store?

A Pineapples B Lettuce
C Eggs D Peaches

Go on to the next

e are descriptions of the way four boys live.

DWARD traveled west with his mother father in a covered wagon. His father has acksmith shop near a mining camp.

IM lives on a modern farm where his father es wheat and keeps a few cows and chick- He also has a small vegetable garden.

ARRY lives in an apartment house in a e city where his father is a bus driver. His her shops in a nearby market and business ion.

OT lives in a cave. Men have not yet ned to plant and harvest crops. His father es and hunts.

ow are some questions about these boys their parents. For each question pick the wer which is most likely to be correct.

Which boy's mother can buy fresh bread each day in a nearby store?

E Edward's
F Jim's
G Larry's
H Ot's

7 Which boy's mother might ask him to clean the cream separator?

A Edward's
B Jim's
C Larry's
D Ot's

8 Which boy's father spends all of his daylight hours getting food for his family?

E Edward's
F Jim's
G Larry's
H Ot's

9 Which boy's father might ask him to help take the yoke off the oxen?

A Edward's
B Jim's
C Larry's
D Ot's

10 Which boys have no telephone?

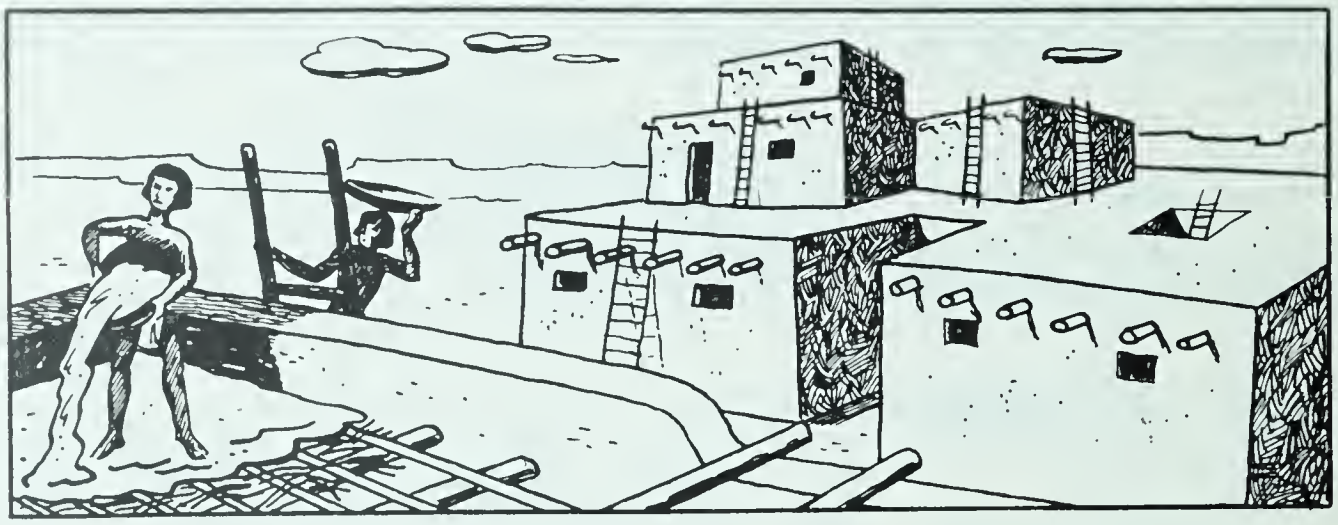
E Edward and Jim
F Edward and Ot
G Jim and Ot
H Jim and Larry

Go on to the next page.

Questions 11–15 are based on these pictures.

Picture 1

Picture 2



Picture 3

Picture 4

Go on to the ne

Why is the kind of work you see in the pictures important?

A Every town has to have good homes.
B Building homes gives work to many people.
C Almost all people need shelter from the weather.
D Most people like to do some kind of work.

In which picture are the builders using material which becomes hard when baked in the sun?

E 1 F 2 G 3 H 4

Which of the pictures shows a kind of house you would probably NOT see in our country today?

A 1 B 2 C 3 D 4

Which of the pictures shows building materials that may have come from a place far away from the building?

E 1 only
F 2 and 3
G 3 and 4
H 4 only

What is the most important idea which these pictures tell us?

A People everywhere need some kind of shelter.
B There are four different kinds of homes.
C Everyone should build homes like those in our country.
D Some kinds of homes are better than others.

On a trip last fall, John's family stopped at the edge of a forest to cook their breakfast. They cleared a spot on the ground and started a fire. A forest ranger stopped to tell them that fires were not permitted in that part of the woods. Everyone was disappointed. John said, "Aw, gee, Dad, we haven't even had breakfast yet. It'll take hours to find a place to eat."

"Never mind, son," said his father. "We'll make the coffee and fry the eggs before we put out the fire. I doubt if the ranger will come back this way."

16 Which is the best reason why John's family should observe fire laws in forests?

E Those who disobey are punished.
F Animals are frightened by campfires.
G Fires can cause great damage in forests.
H Few people know how to build a safe fire.

17 Who makes the laws about fires in forests?

A The forest rangers
B The government
C The people who sell the timber
D The men who cut the timber

18 What should John's family have done when the ranger told them to put out their campfire?

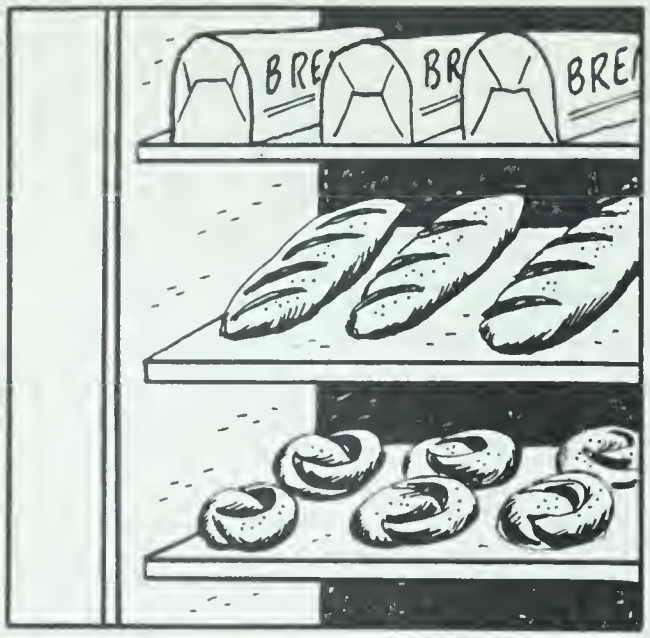
E Put out the fire immediately.
F Finished their cooking as quickly as they could.
G Moved their campfire to a different place in the woods.
H Pretended that no one saw their fire and finished their cooking.

19 Which is the most important idea for John's father to learn?

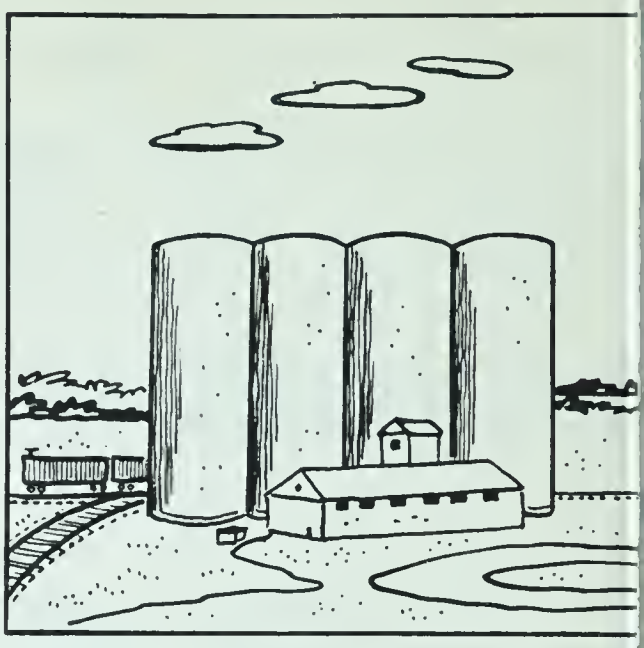
A Campfires must never be built in the woods.
B Rangers should watch what people do very carefully.
C Laws made for the protection of everyone should be followed.
D Forest fires may kill many of the animals of the woods.

Go on to the next page.

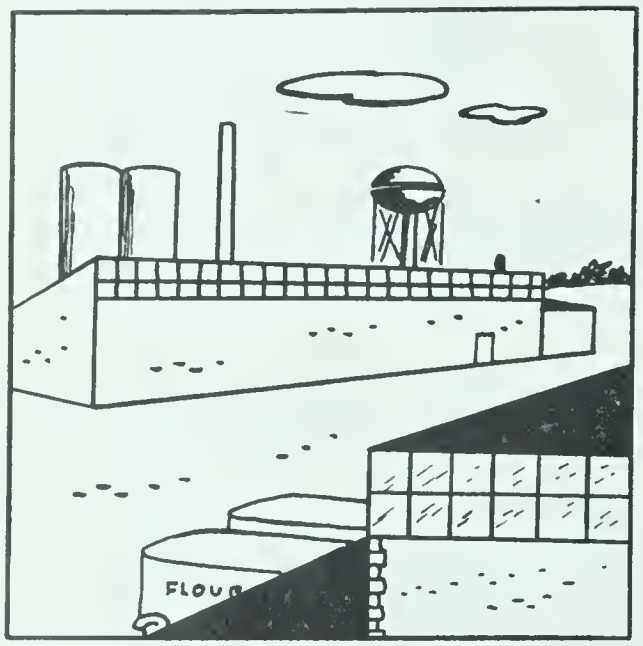
These pictures tell the story of bread. They are not in the right order.



Bread on a store shelf

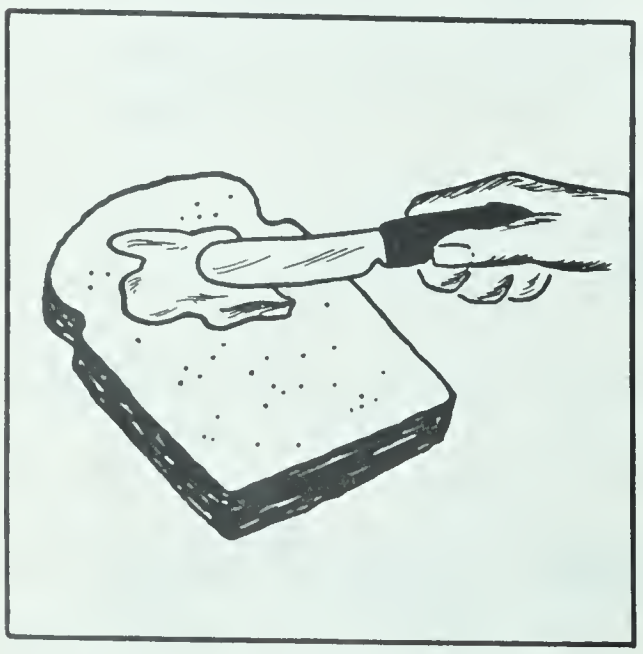


Grain elevator



Flour mill

Bakery



Slice of bread being buttered

Shocks of wheat

Go on to the nex

Which picture should come first?

E The grain elevator
F The flour mill
G The bakery
H The shocks of wheat

Which picture should come next after the grain elevator?

A The bread on a store shelf
B The flour mill
C The bakery
D The slice of bread being buttered

Which picture does NOT show a step in the making of bread?

E The bakery
F The flour mill
G The grain elevator
H The bread on a store shelf

In which of the following states would you be most likely to see wheat growing?

A Vermont B Florida
C Kansas D Utah

Which picture shows something which would have looked most nearly the same in George Washington's time as it does today?

E The bakery
F The flour mill
G The shocks of wheat
H The grain elevator

---

he autumn of 1620 the *Mayflower* sailed
n Plymouth, England. The Pilgrims were
ng to America to find a new home. There
would be able to worship as they pleased.
se early settlers had a long and hard voy-
. They suffered great hardships during their
winter in America.
n the summer of 1955 thousands of Ameri-
s visited Europe. They traveled by boat
by airplane. Some went by plane from
York to London in less than a day. Others
t by boat to Southampton, England, in less
n a week. In 1955 passengers crossing the
antic had a comfortable journey. They also
d in comfort after landing in Europe.

25 Which is the best reason why the 1955 travelers were more comfortable than the Pilgrims?

A The Pilgrims were poor.
B The 1955 travelers were more intelligent.
C The ocean was less stormy.
D Between 1620 and 1955 many inventions had been made.

26 What kind of power was used to move the *Mayflower*?

E Wind blowing on sails
F Many oars pulled by slaves
G Steam engines using coal
H Gasoline engines

27 When the Pilgrims landed in America they found Indians living there. How much did the Pilgrims learn from the Indians about how to live in America?

A The Pilgrims continued to eat their usual food but learned to build houses like those of the Indians.
B The Pilgrims kept many of their old ways and learned some new ways from the Indians.
C The Pilgrims brought their ways of living from England and didn't learn any new ways from the Indians.
D The Pilgrims lived in the ways the Indians lived.

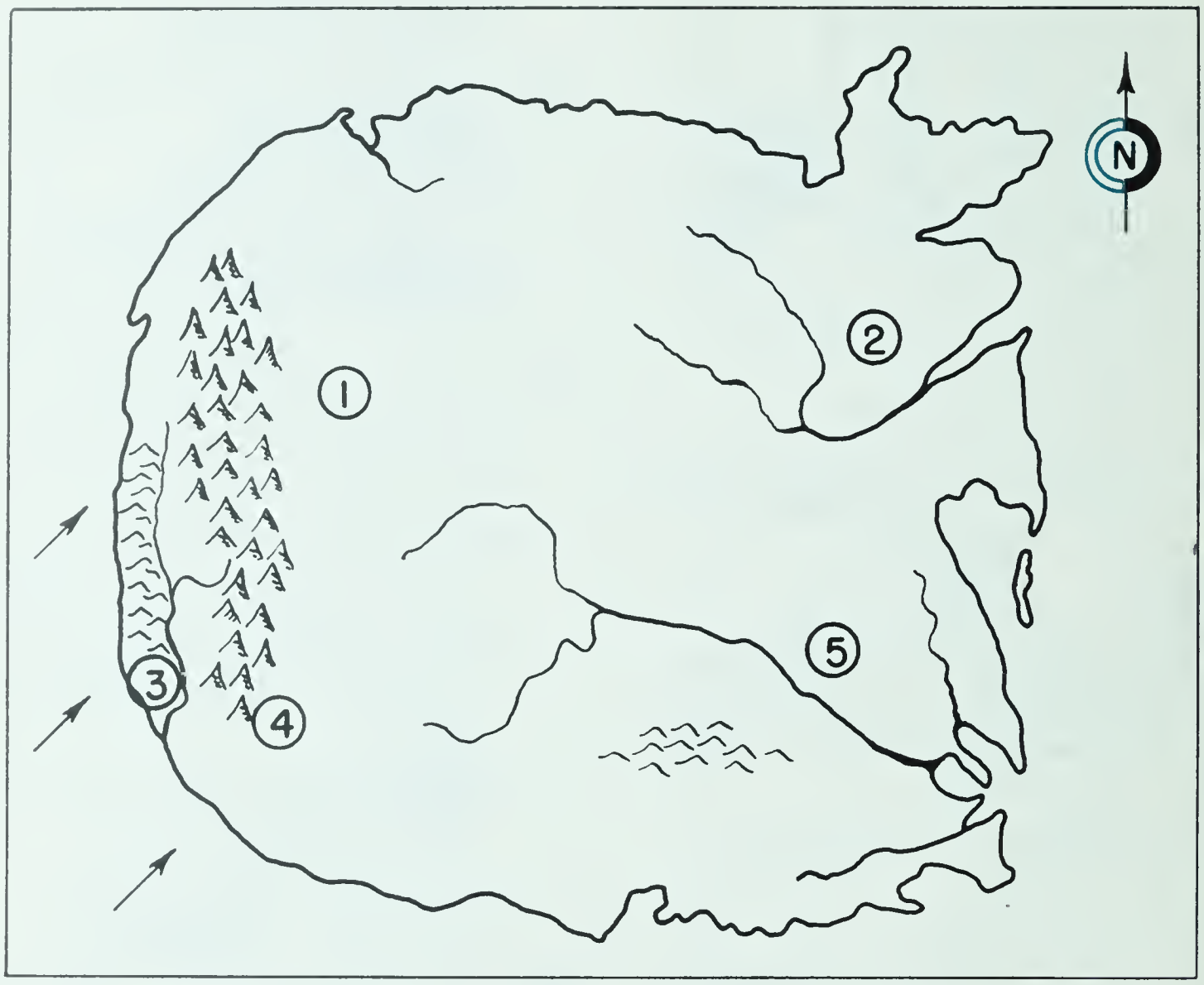
28 Which of these statements about travel between Europe and America is NOT true?

E Europeans went to America in 1620.
F Thousands of Americans went to Europe in 1620.
G Many Europeans visited America in 1955.
H Many Americans visited Europe in 1955.

Go on to the next page.

Here is a map of a make-believe land called NEWLAND. It does not look much like any of the lands you may have studied about in school, but you will see some of the same things you have seen on other maps. If you what these things mean on other maps, yo be able to answer the questions about N LAND.

NEWLAND



Mountains
Hills
Rivers
Winds

0 350 700
Scale of Miles

350
4
1400
175
1575

29 About how far is it across Newland from east to west?

A 700 miles
B 1000 miles
C 1600 miles
D 3000 miles

30 If you traveled by airplane from plac place 5, in which direction would yo

E North to south
F South to north
G East to west
H West to east

31 In which place in Newland would find the LEAST rainfall?

A 1 **B** 2 **C** 3 **D** 5

Go on to the next

he BULOS worshipped Soro, the god of . When Soro was unhappy no rain fell and crops died. To make the rain god happy in the Bulos would kill one of their finest mals.

he CAMAS raised cattle on plains where fall was light. When no rain fell the hot burned the grass. Then the medicine man ld dance and sprinkle water on the brown s. He hoped to drive back into the earth demon who caused the dryness.

he DINGAS, to get a sure supply of water, a tunnel through a nearby mountain ge. They put a dam across the river so that water would flow through the tunnel. The gas believed in one god. They thanked for rich crops from the land which they watered.

he FOX people lived 300 miles from the n on the far side of a high range of moun- s where there was too little rain for good s. On the seaward slope of the mountains winds blowing over the ocean caused heavy s to fall. When the Fox people learned this, crossed the mountains and settled where ainfall was plentiful.

32 Which people made sacrifices in order to please their god?

E Bulos F Camas
G Dingas H Fox

33 Which people irrigated their land?

A Bulos B Camas
C Dingas D Fox

34 Which people probably believed that when the gods were unhappy they made people suffer?

E Bulos and Camas
F Camas and Dingas
G Dingas and Fox
H Fox and Bulos

35 Which people were most successful in getting more water?

A Bulos and Dingas
B Camas and Dingas
C Camas and Fox
D Dingas and Fox

Stop. If you finish before time is called, check your work on this part. Do *not* go on to Part Two until you are told to do so.

DIRECTIONS FOR PART TWO

t Two contains the same kind of material as Part One. Mark your answers in the same way.

Do not turn this page until you are told to do so.

PART TWO

Questions 1–4 are based on these pictures.

Picture 1

Picture 2

Picture 3

Picture 4

Go on to the nex

Which of the following best explains why the work shown in the pictures is important?

A It makes money for workers.
B It provides food for people.
C It is healthful work.
D It makes work for many people.

The man in which picture uses the fewest tools and machines in his work?

E 1
F 2
G 3
H 4

3 In what order would you put the pictures to show that man has learned better and better ways of raising crops?

A 1, 3, 4, 2
B 1, 4, 2, 3
C 4, 1, 2, 3
D 4, 1, 3, 2

4 What is the most important thing the pictures tell us?

E Many people know how to farm.
F Not all people grow the same things on their farms.
G Ways of farming have changed since early times.
H Raising food on a farm is an interesting job.

---

ew boy from another country began school weeks late. On the first day he was in ol Miss Smith introduced him to his class- es. She asked them to help him feel at e. At playtime some of the children who lly played together wondered what they ld do with him. Here is what they said.

: He looks like a good kid. Should we ask m to play ball?

RY: If a boy starts school late, something ust be wrong. We won't be able to count him. He won't make a good ball player. t's keep the same sides we had last week.

My mother says the town is getting full of ople from his country. But I never thought e would show up in our class.

Y: We don't know that he's lazy or that he ight not do his part. He may be a good ll player. Let's treat him like any other y in games and in class. When we know m better, we can make up our minds about m.

Which of these statements about the new boy should the children accept as true?

A He is a stranger in the school.
B He cannot play ball well.
C He does not belong in the school.
D He is always late to school.

6 Which two children disagreed most in their feeling about the new boy?

E Mary and Don
F Harry and Sue
G Sue and Don
H Mary and Harry

7 Which is the fairest way to make up your mind about a person you do not know?

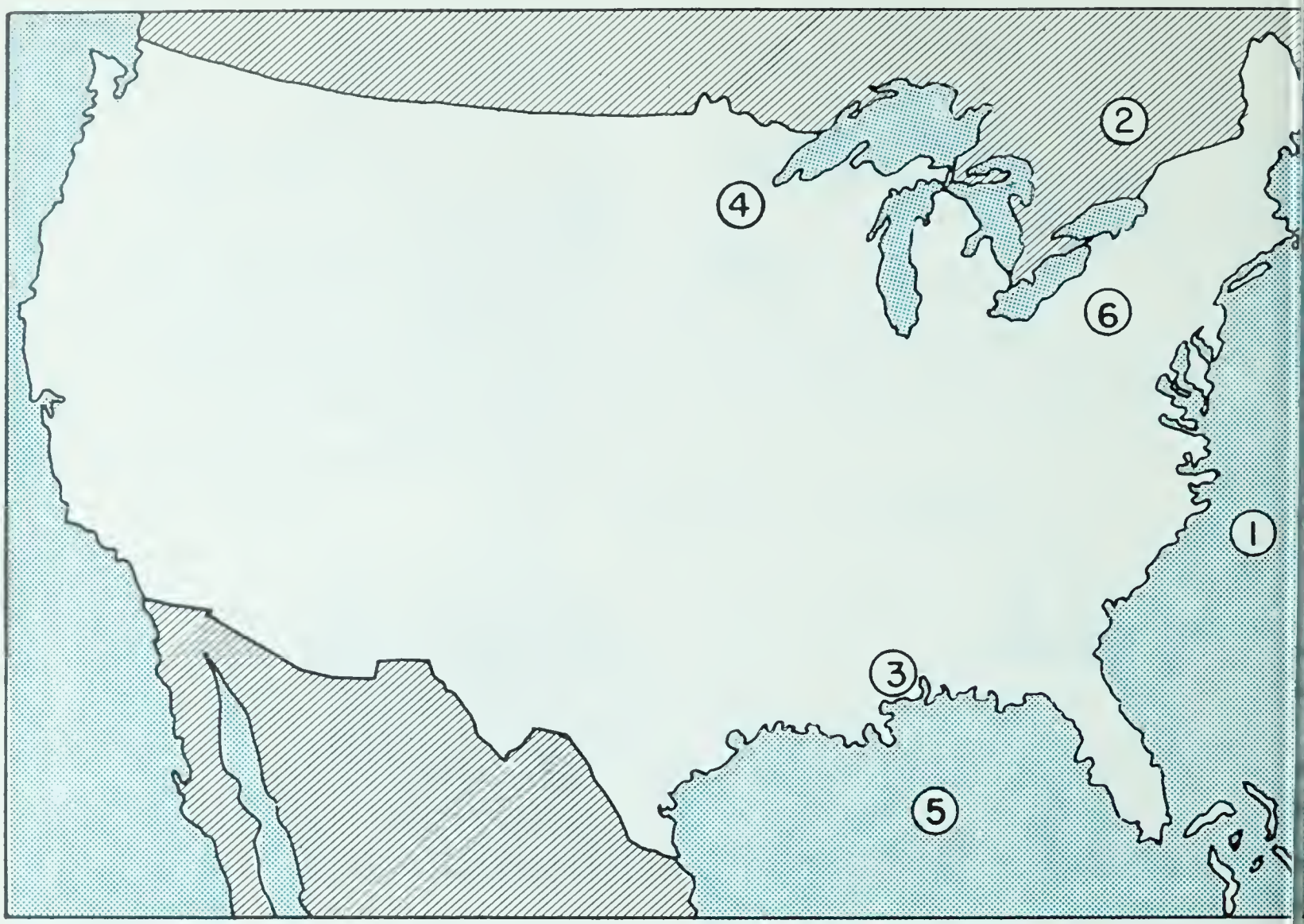
A Decide about him when you know him well.
B Believe all you have heard about him and about people like him.
C Think well of him only if friends of yours know him and like him.
D Make up your mind the first time you see him.

8 In what way could the new boy best help the other children in his class?

E He could leave them alone when they are playing.
F He could help them learn interesting things about his country.
G He could study very hard to show them how much he knows.
H He could let them use all his school supplies.

Go on to the next page.

Questions 9–12 are based on these maps.



MAP X

MAP Y

On Map Y, the Atlantic Ocean is numbered 8. How is the Atlantic Ocean numbered on Map X?

A 1
B 2
C 5
D The Atlantic Ocean is not numbered on Map X.

Part of which of these continents is shown both on Map X and Map Y?

E North America F Australia
G Europe H Africa

11 If you traveled from 3 on Map X to visit friends at 7 on Map Y, you would be traveling

A from one country to another country
B from one state to another state
C within the same state
D from one continent to another continent

12 If you wanted to go from 4 to 6 on Map X, you could travel a route used by

E cattle on their way to the stockyards
F oranges on their way to city markets
G sugar cane on its way to the refineries
H iron ore on its way to the steel mills

---

are sentences which some children wrote t Switzerland.

Y: Switzerland has many snow-covered untains, steep slopes, and streams.

: The farms in Switzerland are small and ky.

IE: Very little coal and iron are produced Switzerland.

Switzerland makes better watches than y other country.

RY: Switzerland has no seacoast.

E: Switzerland has a democratic form of vernment.

Whose sentence best explains why little steel is manufactured in Switzerland?

A Mary's B Connie's
C Tom's D Harry's

Diane's sentence means that Switzerland's government

E is a copy of that of the United States
F may be entirely different from that of the United States
G is like the government of the United States in some ways
H lets people do as they please

15 Whose sentence shows that Switzerland probably has a good supply of electricity?

A Mary's B John's
C Connie's D Diane's

16 Whose sentence would be hardest to prove right or wrong?

E Mary's F John's
G Connie's H Tom's

17 The farms in Switzerland are most like the farms in which state in our country?

A Vermont B Florida
C Ohio D Oklahoma

18 Many people from other countries visit Switzerland each year. The reason most of these visitors come is to

E buy watches
F enjoy life in the mountains
G escape undemocratic governments
H sell iron and coal

Go on to the next page.

Many people have done much for our country during the 300 years since the first colonists made permanent settlements on the eastern shore of North America. Here are four ways in which people have helped our country.

1. Some have helped to open up *new regions.*
2. Some have worked to set up and *improve our government.*
3. Some have given us better ways of living through their work in *science and invention.*
4. Some have added to our *enjoyment of living* through their writings, or their music, or through their efforts to help people.

19 In which of the four ways did Thomas Jefferson and Andrew Jackson help our country?

A 1 **B** 2 **C** 3 **D** 4

20 In which of the four ways did Robe ton and Eli Whitney help our coun

E 1 **F** 2 **G** 3 **H** 4

21 In which of the four ways did Walt man and Stephen Foster help ou try?

A 1 **B** 2 **C** 3 **D** 4

22 In which of the four ways did Boone and Meriwether Lewis h country?

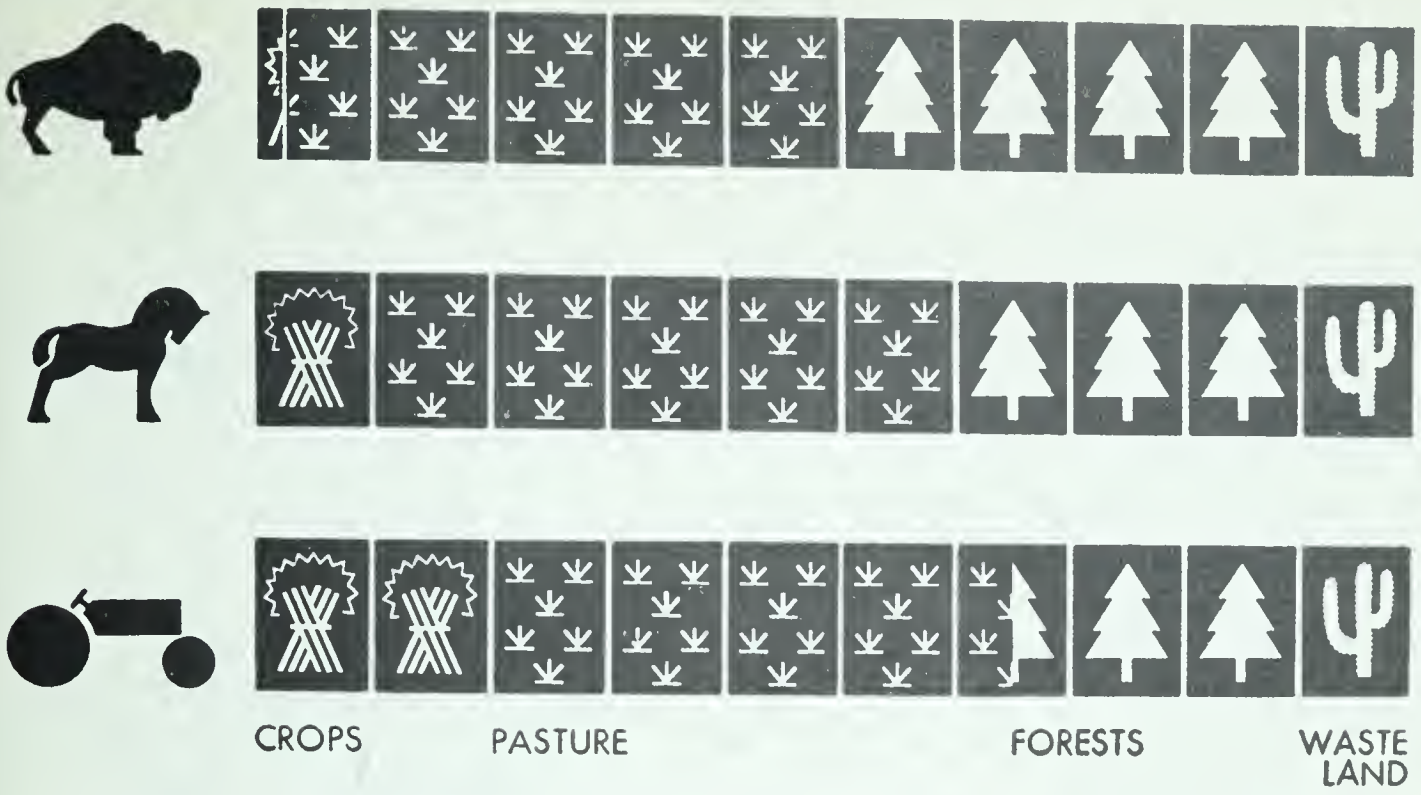
E 1 **F** 2 **G** 3 **H** 4

23 In which of the four ways did Mark and Henry W. Longfellow help ou try?

A 1 **B** 2 **C** 3 **D** 4

Go on to the ne

The chart below shows changes in the use of land in the United States since 1700.



Why is this a good symbol to show pasture lands on the chart?

E There are many trees on pasture lands.
F It looks like the grass on pasture lands.
G Pasture lands are used for growing grain.
H It is smaller than the trees.

How many acres of crop land were there in 1940?

A 100 million acres
B 200 million acres
C 400 million acres
D The chart does not tell.

In which of these years did the United States have the most acres of trees?

E 1700
F 1879
G 1940
H The chart does not tell.

27 Which of these is the most important reason why we still have many acres of waste land in this country?

A Too many Indians live on these lands.
B These lands are far away from where people live.
C Men do not have the right kind of machines for these lands.
D Men have not yet found a way to make these lands valuable.

28 The chart shows a change in acres of forest land between 1700 and 1940. Which of these is an important reason for this change?

E We use wood for many things.
F Forest lands were cleared to make room for farms.
G Some forests have been destroyed by fire.
H All of these reasons are important.

Go on to the next page.

In each of the following questions there are four sentences. ONE sentence does not belong with the others. Find the sentence that should come out because it does not belong with the other three.

29 Grandfather is reading in his newspaper about the first airplane flight and says:

- **A** "Well, well, I see where those Wright boys got that contraption of theirs off the ground."
- **B** "The beach at Kitty Hawk was a pretty good place to try it out."
- **C** "Turn to channel two, Bob. Let's see if there's anything in the news report about it."
- **D** "Hope the thing runs better than some of our automobiles."

30 John and Susan are telling about their summer trip.

- **E** "We visited eight countries in Europe."
- **F** "We saw them change the guard at Buckingham Palace."
- **G** "Hawaii was our favorite."
- **H** "We visited the tulip gardens in Holland."

31 Priscilla lived in colonial Virginia. One day while talking to her father she said:

- **A** "Did you see the Governor ride past in his coach today?"
- **B** "I missed you while you were in Philadelphia meeting with the Continental Congress."
- **C** "England makes us pay too many taxes."
- **D** "We shouldn't be taxed when we go to the movies."

32 John is telling about his first trip to New England.

- **E** "We saw where the Pilgrims landed at Plymouth Rock."
- **F** "Then we drove through the countryside where Paul Revere made his ride."
- **G** "One afternoon we drove out to see the settlement at Jamestown."
- **H** "Our last trip was to Bunker Hill, scene of an early Revolutionary War battle."

The following listing is found in the index o social studies book:

Gold: in Mexico, 47–48, 51; in Peru, 52–5 seven cities of, 54–55; in California, 276–2 in Nevada and Colorado, 349. See also C tes, Pike, Pizarro, Sutter

33 If you were interested in the Gold Rush 1849, to which of these pages would y turn?

- **A** 47–48
- **B** 52–53
- **C** 54–55
- **D** 276–278

34 For further information about the sear for gold in Mexico, under which of th names would you look?

- **E** Pike
- **F** Pizarro
- **G** Cortes
- **H** Sutter

35 On which pages would you look for inf mation about the search for gold on a c tinent other than North America?

- **A** 47–48
- **B** 52–53
- **C** 54–55
- **D** 349

If you finish before time is called, may check your work on either Part or Part Two.

C17P50V — Printed in U.S.A.

Form 4 B

Catalog No. 704-02-1

Cooperative

Sequential Tests of Educational Progress

Social Studies

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Cooperative Test Division · Educational Testing Service · Princeton, N. J. · Los Angeles 27, Calif.

General Directions

This is a test of some of the understandings, skills, and abilities you have been developing ever since you first entered school. You should take the test in the same way that you would work on any new and interesting assignment. Here are a few suggestions which will help you to earn your best score:

1. Make sure you understand the test directions before you begin working. You may ask questions about any part of the directions you do not understand.
2. You will make your best score by answering *every* question because your score is the number of correct answers you mark. Therefore, you should work carefully but not spend too much time on any one question. If a question seems to be too difficult, make the most careful guess you can, rather than waste time puzzling over it.
3. If you finish before time is called, go back and spend more time on those questions about which you were most doubtful.

DIRECTIONS FOR PART ONE

Each of the questions or incomplete statements in this test is followed by four suggested answers. You are to decide which one of these answers you should choose.

You must mark all of your answers on the separate answer sheet you have been given; this test booklet should not be marked in any way. You must mark your answer sheet by blackening the space having the same letter as the answer you have chosen. For example:

0 Which one of the following is an animal?

A Bed
B Dog
C Chair
D Box

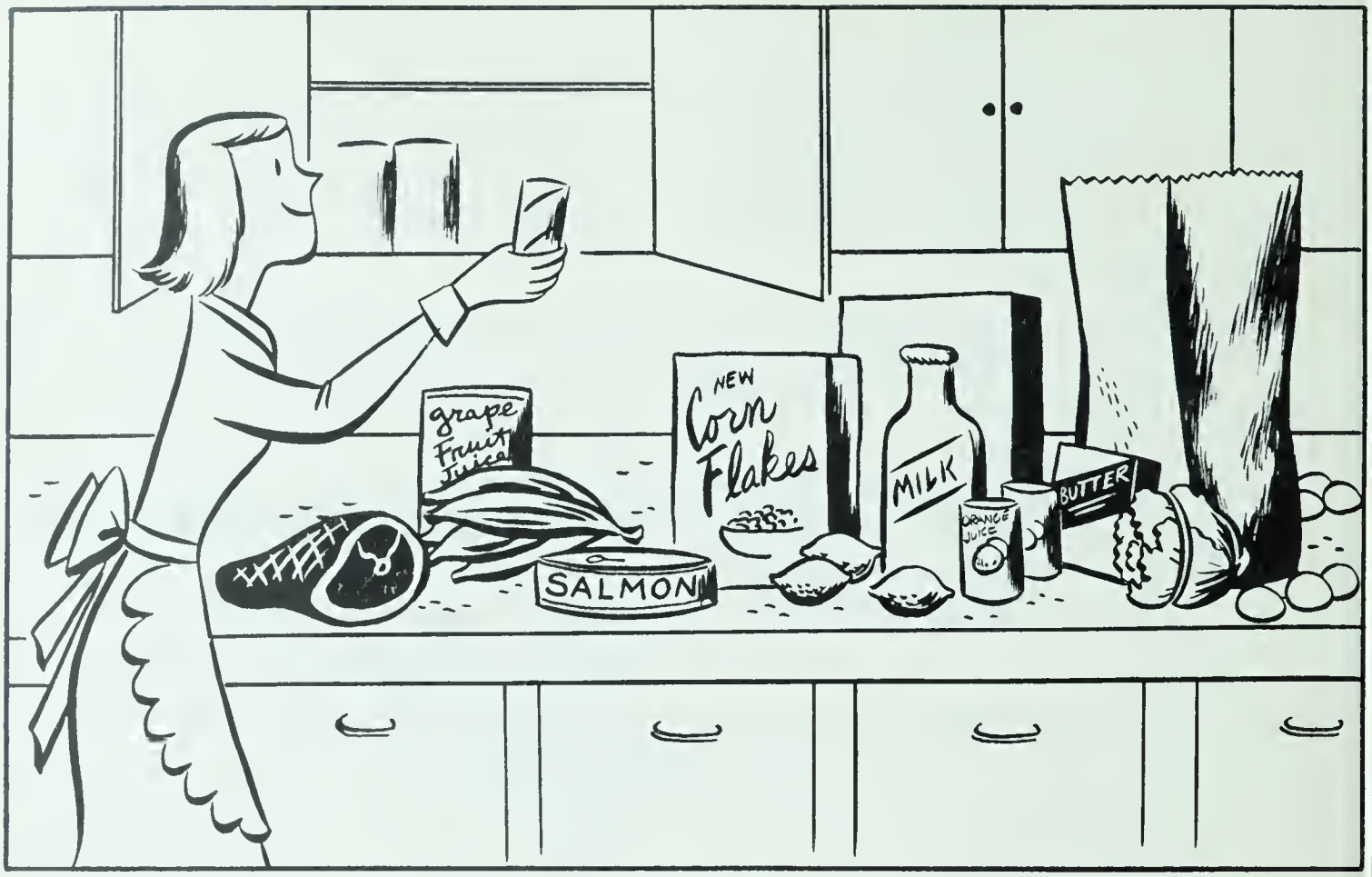
Since a dog is an animal, you should choose the answer lettered **B.** On your answer sheet, you would first find the row of spaces numbered the same as the question—in the example above, it is **0.** Then you would blacken the space in this row which has the same letter as the answer you have chosen. See how the example has been marked on your answer sheet.

Make your answer marks heavy and black. Mark only one answer for each question. If you change your mind about an answer, be sure to erase the first mark completely.

Do not turn this page until you are told to do so.

PART ONE

Mrs. Jones has just returned from shopping. She is putting away the foods she bo



1 Which of these foods did NOT come from farms in our own country?

A Eggs
B Lettuce
C Bananas
D Ham

2 Which of these foods probably came from a farm NOT far from where Mrs. Jones bought it?

E Milk
F Bananas
G Cereal
H Frozen orange juice

3 Which of these foods did NOT have to be prepared for use before Mrs. Jones bought it?

A Milk
B Lettuce
C Cereal
D Salmon

4 If Mrs. Jones lives in Chicago wh these foods traveled farthest to rea store where she bought it?

E Butter
F Lemons
G Milk
H Eggs

5 Which of these foods may have com packing houses in Chicago, Kansa or St. Louis?

A Meat
B Citrus fruits
C Canned salmon
D Frozen orange juice

Go on to the nex

e are descriptions of the way four boys live.

ENRY traveled west with his mother and er in a covered wagon. His father has a ksmith shop near a mining camp.

EN lives on a farm where his father raises at and keeps a few cows and chickens. He has a small vegetable garden.

OM lives in an apartment house in a large where his father is a bus driver. His her shops in a nearby market and business ion.

G lives in a cave. Men have not yet ned to plant and harvest crops. His father s and hunts.

elow are some questions about the parents ese boys. Pick the correct boy or boys for question.

Which boy's mother might say, "You'll have to walk. The elevator isn't working today"?

E Henry's
F Ben's
G Tom's
H Ag's

7 Which boy's mother might say, "It is cold. Roll the stone in front of the door"?

A Henry's
B Ben's
C Tom's
D Ag's

8 Which boy's father might say, "Better put some gasoline in the tractor"?

E Henry's
F Ben's
G Tom's
H Ag's

9 The work of which boys' fathers depends LEAST on the weather and the seasons?

A Henry's and Ben's
B Henry's and Tom's
C Ben's and Ag's
D Tom's and Ag's

10 Which boys' fathers provide most of the family's food?

E Henry's and Ben's
F Henry's and Tom's
G Ben's and Tom's
H Ben's and Ag's

Go on to the next page.

These pictures show some of the kinds of boats used in the world today.

Boat 1

Boat 2

Boat 3

Boat 4

Go on to the nex

Which boat would most likely be used in traveling from New York City to the Congo?

A Boat 1 **B** Boat 2
C Boat 3 **D** Boat 4

Which boat looks most like the flatboats used by pioneer families to float down the Mississippi and Ohio Rivers?

E Boat 1 **F** Boat 2
G Boat 3 **H** Boat 4

Which boats were most likely made from materials found near the river or ocean where they were to be used?

A Boats 1 and 2 **B** Boats 1 and 3
C Boats 2 and 4 **D** Boats 3 and 4

Which boat looks like one used by the people who lived in America before white men came?

E Boat 1 **F** Boat 2
G Boat 3 **H** Boat 4

In what part of the world would you be most likely to see Boat 1?

A In New York City harbor only
B In countries like the United States only
C In European countries only
D In almost any seaport in the world

What do these pictures tell us about water transportation in various parts of the world?

E All people of the world would find steamships better than the kind of boats they now use.
F Although the kinds of boats used are different, most people need and use water transportation.
G Most people of the world like their own kinds of water transportation and are not interested in anything better.
H The kinds of water transportation people use are the same everywhere in the world.

Joe usually walked to school, but today, because he had stayed in bed too long, he was riding with his father. "Hurry, Dad, you're driving too slow. I'll be late, and that's against the rules."

"Sorry, son," said his father. "Twenty-five miles an hour is the speed limit, whether you are on time at school or not."

17 When must Joe's father observe the speed limit?

A Whenever he is driving a car
B When many people are crossing the street
C When traffic is heavy
D When there is a policeman on duty

18 What is the best reason why Joe's father should obey the speed limit?

E There is less danger of accidents when speed limits are observed.
F He may be punished if he does not observe the law.
G The policeman may see him driving too fast.
H The law says that speed limits should be observed.

19 Who makes the laws about speed limits?

A The drivers of cars
B The city policemen
C The city and state governments
D All of these

20 Who should be interested in whether speed limits are observed?

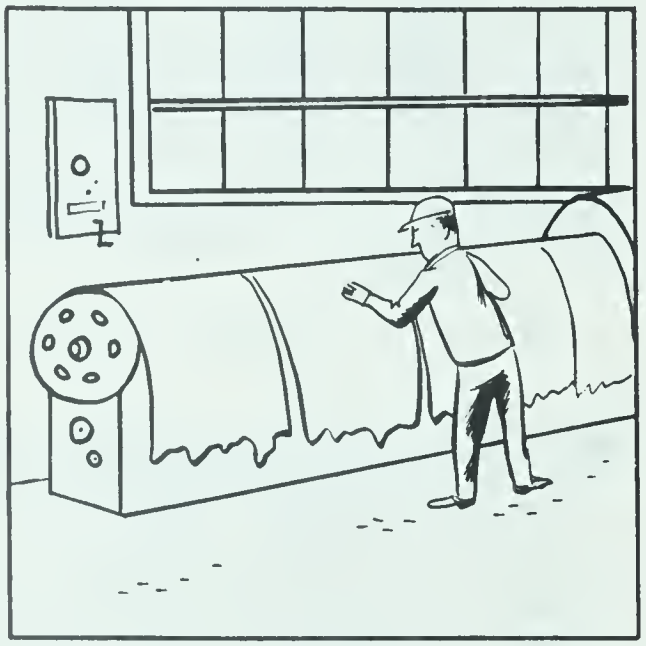
E The city policemen
F The drivers of cars
G The state policemen
H All of these

Go on to the next page.

These pictures tell the story of shoes. They are not in the right order.

Shoe store

Stockyard



Tannery

Shoe factory

Pasture

Shoes in use

Go on to the nex

Which picture should come first?

A The stockyard
B The tannery
C The shoe factory
D The pasture

Which picture should come next after the tannery?

E The stockyard
F The shoe factory
G The pasture
H The shoe store

In which of the pictures does electricity play the most important part?

A The shoe store
B The stockyard
C The shoe factory
D The pasture

Which of the pictures about shoes could also be shown in the story of meat?

E The stockyard and the tannery
F The tannery and the pasture
G The shoe factory and the pasture
H The stockyard and the pasture

Which of the pictures shows something that most people see most often?

A The shoe store
B The stockyard
C The tannery
D The shoe factory

In each of the following questions there are four sentences. ONE sentence does not belong with the others. Find the sentence that should come out because it does not belong with the other three.

26 Grandmother is talking about her early days in the West.

E Once we met Buffalo Bill.
F One day we saw an old Model T Ford come chugging along after us.
G The hardest part of the journey was through the mountains.
H We traveled in a covered wagon.

27 John was giving a talk about "Why I'm Glad I Live in America."

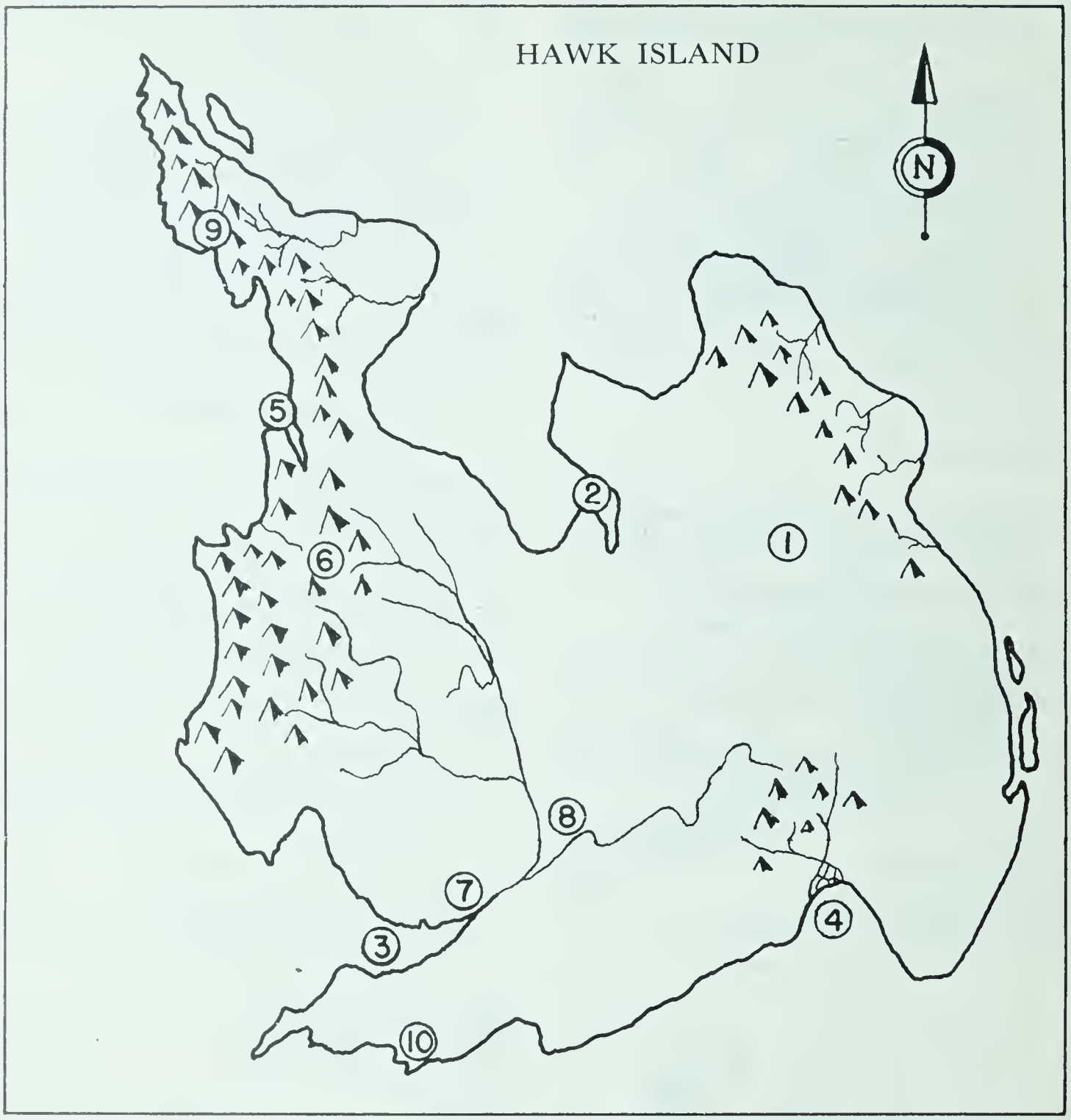
A It doesn't cost anyone any money for my education.
B People can go to whatever church they choose.
C A man can change his job whenever he wants to.
D We can travel from one state to another without asking anyone.

28 Henry is writing a description of life along the Amazon.

E The natives live in small villages along the river.
F They live in grass huts.
G They ride on camels.
H They shoot small animals with blow guns.

Go on to the next page.

Here is a map of a make-believe island called Hawk Island. It does not look much like any of the lands you may have studied about in school, but you will see some of the same things you have seen on other maps. If you k what these things mean on other maps, will be able to answer the questions a Hawk Island.



29 About how far is it across Hawk Island from place 1 to the mouth of the river directly south of it?

A 200 miles
B 700 miles
C 1400 miles
D 2200 miles

30 Which of these places is on a penin

E 4 **F** 6 **G** 7 **H** 9

31 If explorers came by ship to Hawk Is at what place would they find the harbor?

A 2 **B** 4 **C** 9 **D** 10

Go on to the nex

The GAMAS worshipped Rabu, the god of n. When Rabu was unhappy no rain fell d the crops died. To make the rain god ppy again the Gamas would sacrifice one of ir finest animals.

The RATAS raised cattle on plains where nfall was light. When no rain fell the hot burned the grass. Then the medicine man uld dance and sprinkle water on the brown ss. He hoped to drive back into the earth demon who caused the dryness.

The LEDOS, to get a sure supply of water, a tunnel through a nearby mountain ge. They put a dam across the river so t the water would flow through the tunnel. Ledos believed in one god. They thanked for rich crops from the land which they watered.

The MONT people lived 300 miles from ocean, on the far side of a high range of ntains where there was too little rain for d crops. On the seaward slope of the ntains the winds blowing over the ocean sed heavy rains to fall. When the Mont ple learned this, they crossed the moun- s and settled where the rainfall was plenti-

32 Which people believed that demons caused bad luck?

E Gamas
F Ratas
G Ledos
H Mont

33 Which people had a religion most like that of many Americans?

A Gamas
B Ratas
C Ledos
D Mont

34 Which people were probably the best builders?

E Gamas
F Ratas
G Ledos
H Mont

35 The Gamas probably worshipped a rain god because

A they had killed all the missionaries
B they didn't know any better
C rain was very important to them
D all people worshipped a rain god at that time

Stop. If you finish before time is called, check your work on this part. Do *not* go on to Part Two until you are told to do so.

DIRECTIONS FOR PART TWO

rt Two contains the same kind of material as Part One. Mark your answers in the same way.

Do not turn this page until you are told to do so.

PART TWO

Faria is a girl who lives in the Arabian Desert. Picture 1 shows where Faria lives.

PICTURE 1

Helen lives in Arizona where it is also hot and dry. Picture 2 shows where Helen lives.

PICTURE 2

Go on to the next

Why does Faria's family move from place to place?

A Faria's people have to move in search of water and grass for their herds.
B Faria's father cannot find work.
C Faria's father believes that there will be better houses in the next town.
D Faria's family likes to move.

In what way are the people on the Arabian Desert and the people in Arizona most alike?

E They use electricity to cool their homes.
F They depend on the inventions and work of many people to supply their needs.
G They eat the same kinds of food since they have electric refrigerators.
H They cannot control the out-of-door climate.

Faria and her family bow toward a religious center called Mecca several times a day. Helen and her family go to church each week. This shows that

A Faria and her family are more religious
B people worship God in different ways
C Helen's religion is a better one
D people must go to a church when they worship God

Which of these is the best reason for the difference in the way Faria and Helen live?

E They live in different climates.
F The people in the Arabian Desert have a different religion.
G Helen's people have irrigated their land.
H Faria's family doesn't work as hard as Helen's.

Many people have done much for our country during the 300 years since the first colonists made permanent settlements on the eastern shore of North America. Here are four ways in which people have helped our country.

1. Some have helped to open up *new regions.*
2. Some have worked to set up and *improve our government.*
3. Some have given us better ways of living through their work in *science and invention.*
4. Some have added to our *enjoyment of living* through their writings, or their music, or through their efforts to help people.

5 In which of the four ways did Thomas Edison and Alexander Bell help our country?

A 1 **B** 2 **C** 3 **D** 4

6 In which of the four ways did Abraham Lincoln and Theodore Roosevelt help our country?

E 1 **F** 2 **G** 3 **H** 4

7 In which of the four ways did Kit Carson and Brigham Young help our country?

A 1 **B** 2 **C** 3 **D** 4

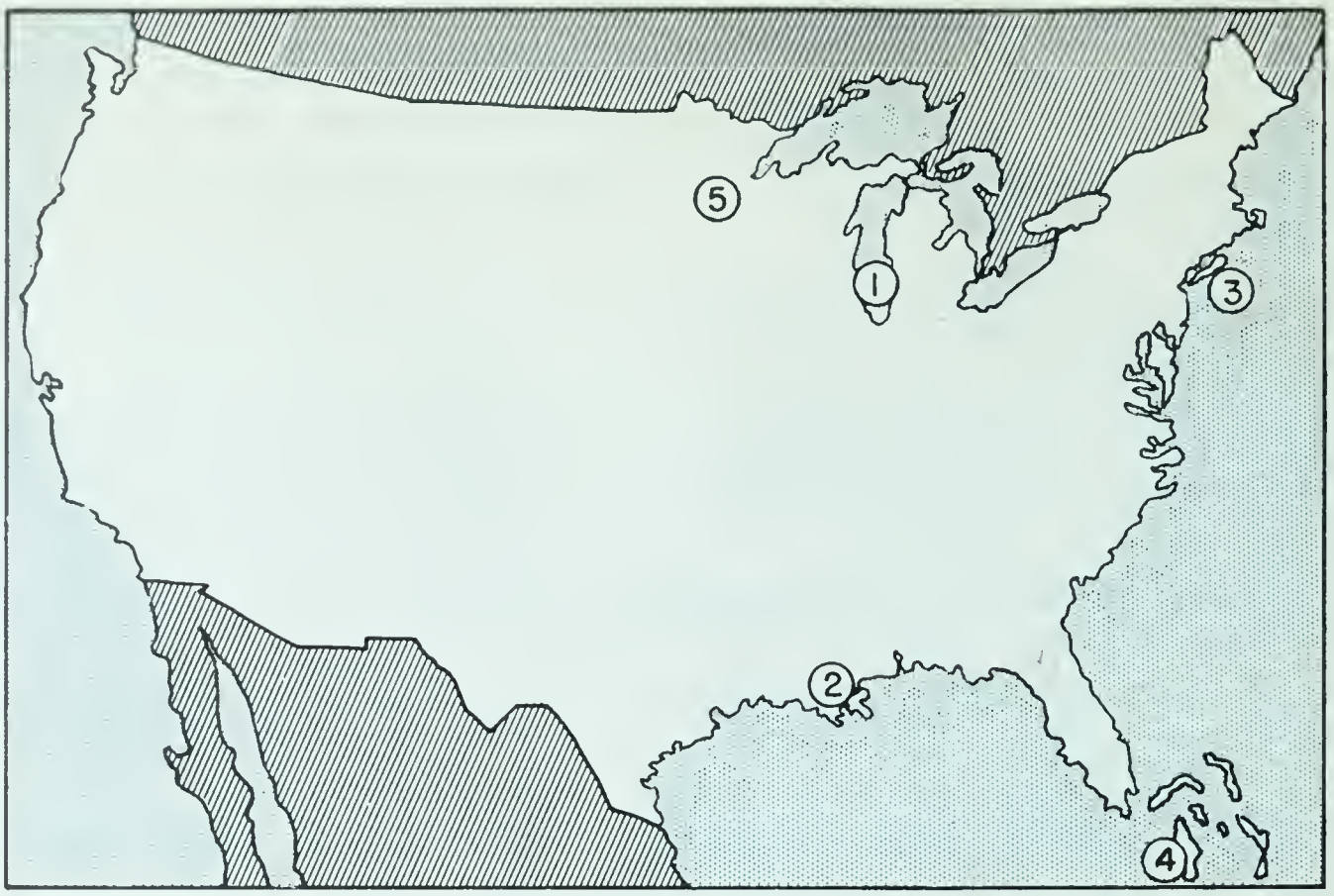
8 In which of the four ways did Cyrus McCormick and Orville Wright help our country?

E 1 **F** 2 **G** 3 **H** 4

9 In which of the four ways did Carl Sandburg and Booker T. Washington help our country?

A 1 **B** 2 **C** 3 **D** 4

Go on to the next page.



MAP A

MAP B

Go on to the ne

estions 10–13 are based on the maps on p. 12.

A country shown on both maps is

E Italy
F England
G the United States
H Spain

What region on Map B has a hot, wet climate?

A 6 **B** 7 **C** 9 **D** 10

12 Find 8 on Map B. How is the same place numbered on Map A?

E 1 **F** 2 **G** 4 **H** 5

13 If you traveled from 3 on Map A to 7 on Map B, you would be traveling mainly from

A west to east
B east to west
C north to south
D south to north

---

re are some sentences which children wrote ut Norway.

AN: Norway is a country of harbors, mountains, and swift streams.
K: Every little patch of good land in Norway is farmed.
TY: Norway has some iron, but almost no coal and oil.
L: Norway sends fish, paper, and paper products to other countries.
RRY: Hay, an important crop in Norway, must be spread out on racks to dry.
NE: Norway is the "Land of the Midnight Sun."

Whose sentence shows that Norway probably uses water power?

E Susan's
F Jack's
G Bill's
H Anne's

Whose sentence helps us to know that Norway is a country far from the equator?

A Susan's
B Patty's
C Harry's
D Anne's

16 Whose sentence tells us that Norway has a difficult time raising enough food for its people?

E Susan's
F Jack's
G Bill's
H Harry's

17 Whose sentence helps us to know that Norway has many forests?

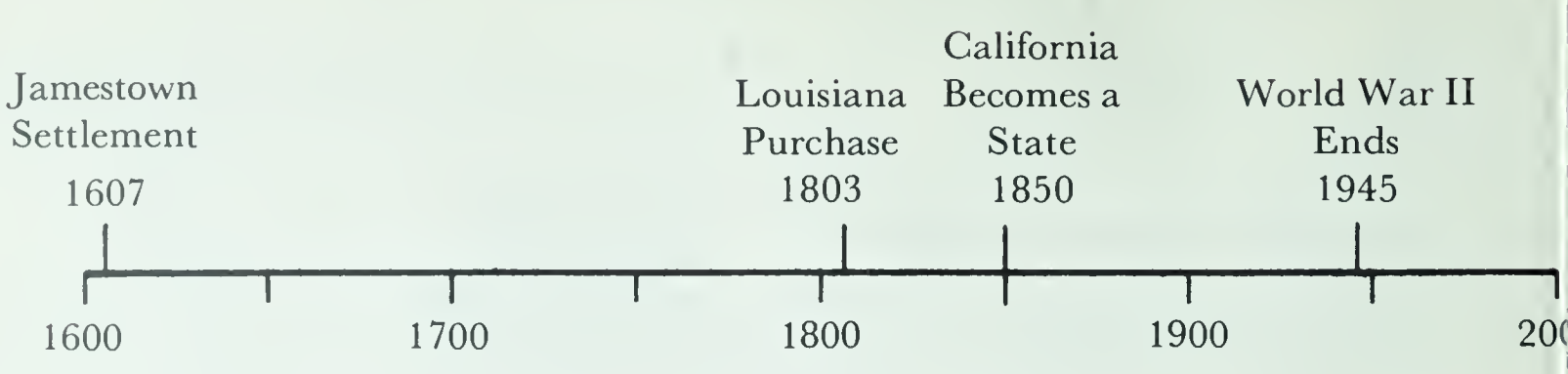
A Patty's
B Bill's
C Harry's
D Anne's

18 Whose sentence leads us to believe that dairying may be an important industry in Norway?

E Susan's
F Patty's
G Bill's
H Harry's

Go on to the next page.

This is a time line which shows some important events in American history.



19 Which of the events on the time line shows when the United States first owned all of the Mississippi Valley?

- **A** Jamestown Settlement
- **B** Louisiana Purchase
- **C** California Becomes a State
- **D** World War II Ends

20 Between which two events did Texas join the United States?

- **E** Jamestown Settlement and Louisiana Purchase
- **F** Louisiana Purchase and California Becomes a State
- **G** California Becomes a State and World War II Ends
- **H** Texas has not yet become a state

21 How many centuries are shown bet the Jamestown Settlement (1607) California Becomes a State (1850)?

- **A** 1
- **B** About $2\frac{1}{2}$
- **C** 4
- **D** About $5\frac{1}{2}$

22 If the Civil War were put on the time it would fall closest to which of the ev

- **E** Jamestown Settlement
- **F** Louisiana Purchase
- **G** California Becomes a State
- **H** World War II Ends

Go on to the nex p

A shy, dark-haired girl from another country gan school several weeks late. On the first y she was in school, Miss Jones introduced to her classmates saying, "Try to help our w classmate feel at home. She doesn't speak language very well, but I am sure that you help her learn what she needs to know very ckly."

At playtime some of the children who usu- played together wondered about the new . Here is what they said.

TH: She's awfully pretty. Shall we ask her o play with us?

NE: We don't want her with us. She won't e able to understand a thing we tell her.

K: My mother says there are far too many eople like her in our town already. But he's the first one I've *had* to play with.

L: We don't know that she wouldn't be ble to understand our games. Let's treat er like any other girl and see how much ve can help her with her English. We'll robably find that we really like her, once ve get to know her.

Which of these is probably the reason the teacher asked the children to help the new girl?

A She was too busy to take care of the girl during playtime.
B She couldn't understand very well what the girl was saying.
C She had other new children to worry about.
D She hoped the children could show the girl what to do at school.

24 Which of the children seemed to understand and believe in "fair play"?

E Anne
F Jack
G Bill
H There is nothing about fair play in what any of them said.

25 What is one of the chief problems the new girl will have in starting school in the United States?

A Getting the teacher to help her
B Learning to get to school on time
C Making friends with children who are strangers
D Getting the books and school supplies that she will need for her school work

26 Why did Jack say what he did about the new girl?

E He was repeating what he had heard at home.
F He had been hurt once in playing with a strange child.
G He had seen a movie where people like this girl behaved badly.
H There was no special reason; he was just talking.

Go on to the next page.

This chart shows cash farm income for four different years. Each dollar sign ($) equals $1000 received in cash by farmers from the sale of crops or livestock.

For Example: $$$ equals $3000
$$$$$ equals $5000

CASH FARM INCOME IN JONES COUNTY

YEAR		INCOME		
1910	Crops	$$$$$	$$$$$	
	Livestock	$$$$$		
1915	Crops	$$$$$	$$$$$	$$$$$
	Livestock	$$$$$	$$$$$	$$$$$
1920	Crops	$$$$$	$$$	
	Livestock	$$$$$	$$$$$	$$
1925	Crops	$$$$$	$$$$$	
	Livestock	$$$$$	$$$$$	$$$$$

27 In which year was the total cash farm income the greatest?

A 1910
B 1915
C 1920
D 1925

28 In which year did people who raised cattle probably make the LEAST money?

E 1910
F 1915
G 1920
H 1925

29 What was the *total* cash farm income in 1910?

A $15,000 (15 thousand dollars)
B $20,000 (20 thousand dollars)
C $25,000 (25 thousand dollars)
D $30,000 (30 thousand dollars)

30 Which of the two sources of income brought the farmers the most money during these four years?

E Livestock
F Crops
G The same for both
H You cannot tell from the chart.

31 What does this chart tell us about farming?

A Farmers are prosperous.
B Farmers are poor.
C Farmers make more money every year.
D Farm income is not the same from year to year.

In the Table of Contents of a social studies book we find the following chapter headings:

1. Europe Finds America
2. People Come to Stay
3. America Becomes a Nation
4. America Stretches from Sea to Sea
5. Many Nations Build America
6. America Improves Its Ways of Living
7. America and Other Nations Need Each Other
8. America Looks Ahead

32 In which chapter would you expect to find a description of huge dams built by the government?

E 1 F 3 G 6 H 7

33 In which chapter would you look for a report on peacetime uses of atomic energy?

A 3 B 4 C 5 D 8

34 To find out how California and Oregon became part of the United States you would look in Chapter

E 1 F 2 G 4 H 6

35 Which two chapters might tell how stories of riches brought traders to new settlements?

A 2 and 4
B 4 and 8
C 6 and 7
D 7 and 8

If you finish before time is called, you may check your work on either Part One or Part Two.

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APPENDIX B

SOCIAL STUDIES PROBLEMS WITH GUIDING QUESTIONS

There were two social studies problems with guiding questions.

1. Part (i) Hawaii was used for the initial interviews. Part (ii) Cuba was used for the final interviews.

Part (i) Hawaii

You are beginning a new enterprise in your class. It is going to be about Hawaii. Think of problems that your class should study, or questions that your class should answer. Tell which problem you would choose to work on.

a) Where would you find information about your topic? Where would you get more information?

b) How would you get your information from the books? How would you organize your information? What would you do with it?

c) How would you share your information or report it to the class?

Part (ii) Cuba

The term Cuba was substituted for Hawaii in part (i).

2. Part (i) Seacoast Cities of the Netherlands was used in the initial interviews. Part (ii) Cities of the United States was used in the final interviews.

Part (i) Seacoast Cities of the Netherlands.

Several of the seacoast cities in the Netherlands have fine harbours, as the ocean runs far into the land, forming bays which are well protected from ocean storms by the land about them. These bays make safe places for ships to anchor. Some of these seaports have become important

cities. Amsterdam and Rotterdam are among the largest. Ships from all over the world come to their great docks to unload supplies for many of the countries of Europe.

I Are there many important seacoast cities in the Netherlands? What in the paragraph, tells you that?

II Do many European countries get some of their goods through the seaports of the Netherlands?

III Are the seacoast cities of the Netherlands the most important cities in Europe? Can you prove your answer?

IV Are the seaports of the Netherlands likely to be troubled by ocean storms?

V Does the paragraph tell why Amsterdam and Rotterdam became large cities? What reasons does it give?

Part (ii) Cities of the United States

New York City is situated where the Hudson River joins the Atlantic Ocean. Chicago is on the shores of Lake Michigan. San Francisco is on the shores of a bay leading to the Pacific Ocean. New Orleans is at the mouth of the Mississippi River. Pittsburgh, Pennsylvania is at the place where two rivers join and where many railroads meet. These are some of the largest cities in the United States. Many of them have good harbours and ports for ships. Others are where rivers or railroad lines meet. Land and buildings in such cities cost much more than farm land and buildings of the same size.

I Do the largest cities in the United States have good harbours and railroad lines? What in the paragraph tells you that?

II Is land in these big cities very valuable?

III Do all the large cities of the United States have good harbours or ports? Can you prove your answer?

IV Are cities at seaports, rivers or railroad centres usually small?

V Does the paragraph tell why Chicago has become a large city? What reasons does it give?

APPENDIX C

PROBLEM OF A SOCIAL STUDIES TYPE WITHOUT GUIDING QUESTIONS

Part (i) The Sprained Ankle was used in the initial interviews.

Part (ii) The Fishing Accident was used in the final interviews.

Part (i) The Sprained Ankle

One summer day your nine year old sister, Sally, your eight year old brother, Tom, and you are tramping along the paths of a wooded valley. You are a quarter of a mile from a busy highway and three miles from the town where you live. There are no houses nearby. You have no special equipment except a small lunch box. Suddenly Tom falls. He tries to get up but he cannot as his ankle has been badly twisted. What would you do? Tell what you would think, what you would do, and what you expect would happen.

Part (ii) The Fishing Accident

Early on a summer evening you are fishing with your eight year old brother, Harold, and your five year old sister, Jean. Each of you has a willow branch and a string for a fishing rod. You are on the heavy planks that form the top of the pier where boats can be tied near your summer cottage at the lake. Your Mother and Father are visiting friends at the next cottage a quarter of a mile along the lake. Suddenly Jean cries. She has pushed her bare foot between the planks and she can't get it out. What would you do? Tell what you would think, what you would do, and what you expect would happen.

APPENDIX D

CHECK LIST GUIDE

This check list guide is for the STEP test form 4A and for the problems used in the final interviews.

To be given credit for the use of a skill the student must, through his words, inidcate clearly that he used the skill as defined here. The minimum requirements for the check-list categories that apply to each problem are stated. The wording of the categories is condensed.

Examples of good and poor responses are given. In some cases only a portion of the response is given. The portion omitted would not have made the response a better or poorer illustration of use of the check-list skill.

STEP TEST FORM 4A

The check list was fitted to the twenty-seven problems selected from the two parts of the STEP test form 4A. For example, categories 1 and 2 from Part I of the check list and categories 1 and 4 from Part II of the check list were found to apply to STEP problem number 20.

STEP No. CHeck List

20) I 1. Define the problem. Tell which picture should come first in the story of bread.

Good. CH 8: I put H because bread is made from wheat so it should come first.

Poor. CL 11: I thought that the grain elevator you can make bread with it.

I 2. Understands key words. Shocks of wheat are the stooks of wheat.

Good. CH 1: ---- wheat has to be put into shocks ----

Poor. CL 8: ---- I picked the wheat stocks.

II 1. Arrange ideas in sequence. The wheat in the field precedes the other steps shown.

Good. EH 9: H comes first-- The wheat grows in the fields.

Poor. CL 6: I thought the grain elevator should come first to make the other things.

II 4. Use outside information. Wheat is harvested or grown in the fields before it is made into bread.

Good. CH 13: The wheat has to grow in the field before they do any of these other things.

Poor. EL 9: Grain comes before they take it to the factory.

21) I 1. Define the problem. Tell which picture shows the next step after the grain elevator.

Good. CH 8: Should be B (flour mill) because after the grain elevator the grain is made into flour-----

Poor. CL 4: Because after you have made the bread you send it to the bakery.

I 2. Understands key words. The flour mill is the place where wheat is ground into flour.

Good. CH 3: ---it is taken to the flour mill so it can be made into flour.

Poor. CL 6: The grain elevator grinds the grain out to make flour.

II 1. Arrange ideas in sequence. The wheat goes from the elevator to the flour mill.

Good. CH 6: After the grain elevator it would be the flour mill.

Poor. EL 9: Because they have to take the grain out of the stock of wheat. Also EL 7: I think that is one I guesses at.

II 4. Use outside information. Flour is used to make bread.

Good. CH 13: You have to make flour before you can make bread ----

Poor. CL 1: After it leaves the grain elevator it goes to the flour mill to become --- I don't know what they do --- but it goes there.

22) I 1. Define the problem. Find a picture which does not show part of the bread-making process.

Good. CH 2: The bread is shown on the store shelf ---- It does not show the making of the bread.

Poor. CL 10: E (The bakery) They could show the process.

I 2. Understands key words. Bread on a store shelf has been baked and is ready for sale.

Good. EH 8: The bread on the store shelf is for people to buy ---

Poor. CL 5: H -- The only one that doesn't show a step in the making of bread.

II 1. Arrange ideas in sequence. There is a sequence of bread-making steps but the bread on the store shelf has been through these steps.

Good. CH 5: All other pictures getting ready to bake the bread. In H it is already baked.

Poor. CL 8: G (The elevator) doesn't show a step of what happens in the making of bread.

23) I 1. Define the problem. Name the state where wheat is grown

extensively.

Good. EH 7: D (Utah) It rains quite a lot there and has good soil to make it grow.

Poor. CL 8: A (Vermont) Because it is nearer --- it is in Canada and usually Canada is famous for growing wheat.

II 4. Use outside information. Wheat is grown in Kansas.

Good. CH 3: Kansas is in the heart of the Great Central Plain of the U. S. and that is where the climate is more suitable to the growing of wheat.

Poor. CL 10: Should have been B (Florida) I've been to Florida and saw wheat growing there.

24) I 1. Define the problem. Find the picture that shows something that looked almost the same nearly two hundred years ago.

Good. EH 8: Stocks of wheat because the bakery, flour mill and grain elevator have all been modernized since George Washington's time.

Poor. CL 5: G (The shocks of wheat) He lived on a farm and wouldn't see the elevators and factories.

I 2. Understands key words. Shocks of wheat are stooks of wheat.

Good. CL 10: They put it in shocks just the same in those days.

Poor. EL 8: It should have been stocks of wheat.

II 4. Use outside information. There were no modern buildings or industries in George Washington's time but the wheat plants are nearly the same.

Good. CH 2: The bakery, the flour mill and the grain elevator have all been improved since George Washington's time. The shocks of wheat have

remained the same.

Poor. CH 7: H (The grain elevator) It looks a lot like the olden days.

32) I 1. Define the problem. Tell who gave up something valuable to please their god.

Good. EH 8: The Bulos offered one of their finest animals to the rain god when their crops died.

Poor. CL 1: It should be E (Bulos) - they worship Soro and they worship gods.

I 3. Translate difficult material. The sacrifice is the killing of a fine animal.

Good. CH 1: Well the Bulos would kill one of their finest animals and that is their sacrifice.

Poor. CL 11: E (The Bulos) I think they made some sacrifices on the rain god.

33) I 1. Define the problem. Tell which people brought water in large amounts to their land.

Good. EH 9: The Dingas was like irrigating the land like they do now.

Poor. CL 6: C (The Dingas) Their god gave them land to raise crops. The Dingas were very proud of their land.

I 3. Translate difficult material. Irrigating may mean water flowing through a ditch or tunnel to the land that needs it.

Good. CH 1: The Dingas dug a tunnel to let water flow through onto the land and that is called irrigation.

Poor. CL 11: I think the Fox people would get water from the mountain.

II 3. Select relevant data. The Dingas dammed the river, made

the water flow through the tunnel, and watered the land.

Good. EH 13: They dug a tunnel and dammed the river.

Poor. CL 1: D (The Fox) They had to irrigate because there was little water where they stay.

II 5. Draw a conclusion. Irrigating is watering the land. The Dingas brought water to the land. Therefore the Dingas irrigated.

Good. EH 5: It says Dingas tunneled through a nearby mountain range and put a dam across the river so water could flow through the tunnel to their farm land.

Poor. EL 6: It should be C (Dingas) because they let the water flow through tunnels.

34) I 1. Define the problem. Tell who believed that unhappy goods would mistreat the people.

Good. EH8: E (Bulos and Camas) When no rain fell both peoples crops died and both peoples made a sort of an offering to the gods.

Poor. CL 11: F (Camas and Dingas) I thought that the god's reign was unhappy because he wouldn't let it rain.

I 2. Understands key words. A demon is an evil spirit or evil god.

Good. CH 9: --- Camas tried to send the evil spirit back to the ground.

Poor. EL 6: G (Dingas and Fox) The Fox believed that the godless made the rain and the Dingas didn't.

II 3. Selects relevant data. If the Bulos' god, Soro, was unhappy no rain fell so the crops died. The Camas demon caused dryness.

Good. EH 9: The Bulos thought Soro their god made the people suffer by

not giving rain so the crops died--and the Camas thought a demon was in the ground that caused dryness and made the people suffer.

Poor. CL 8: H (Fox and Bulos) In the story it tells how the people had gods and when the god was unhappy no rain fell.

II 5. Draws a conclusion. The Bulos god caused the crops to die. The demon of the Camas caused dryness. The Bulos and Camas believed that the gods made people suffer.

Good. CH 2: The Bulos believed that when the god was unhappy the crops died. The Camas --- and hoped that it would drive back the demon that caused the dryness.

Poor. CL 5: (E) They believed that or CL 4: E No rain fell, the crops died and the hot sun burned the grass.

35) I 1. Define the problem. Which people were best able to get more water.

Good. CH 7: D (Dingas and Fox) Both tribes were thoughtful and wise so they could get more water.

Poor. CL 6: C (Camas and Fox) When the Camas and the Fox when the god was angry the medicine man sprinkled water on the brown grass.

II 3. Selects relevant data. The Dingas watered the land. The Fox moved to where rainfall was plentiful.

Good. EH 13: The Fox people moved over the mountains where rainfall was plentiful and the Dingas used tunnels and dams to get more water.

Poor. CL 11: D (Dingas and Fox) I think this because they had more water than the other people.

II 5. Draws a conclusion. The Dingas brought water to the land.

The Fox moved to where there was more water. The Dingas and Fox were able to get more water.

Good. EH 8: The Dingas and Fox both found ways to get more water supply. Dingas dug a tunnel through a nearby mountain and the Fox moved to the seaward slope of the mountain.

Poor. CL 4: When the medicine man danced the rain would fall.

Part 2

9) I 1. Define the problem. Tell how the Atlantic Ocean is numbered on Map X.

Good. CH 1: The Atlantic Ocean is on the east coast of the United States and number 1 is on Map X on the east coast of the United States.

Poor. CL 11: I think that on Map Y the ocean is bigger than on Map X.

I 2. Use key words. The Atlantic Ocean is a large body of water which lies east of the United States.

Good. CH 6: Atlantic Ocean is east of United States --

Poor. EL 6: It is not numbered.

I 5. Interprets a map. The student must indicate that he recognizes either the Atlantic Ocean or the United States, and preferably on both maps.

Good. EH 8: Map X looks like the United States, on Map Y it looks like the continent that the United States is in so put down No. 1 on Map X because it looks like approximately the same place as 8 on Map Y.

Poor. CL 6: C (5 The Gulf of Mexico) The Atlantic Ocean runs around Canada.

10) I 1. Define the problem. Tell the continent part of which is

shown on both maps.

Good. CH 6: Map X is North America and that is on map Y too.

Poor. EL 9: G (Europe) Because part of it looks the same.

I 5. Interprets a map. North America is shown on map Y. The United States is shown on map X.

Good. CH 11: Map X is North America and North America is on map Y.

Poor. CL 6: Africa is in the same places on each map.

II 4. Uses outside information. The United States is part of North America.

Good. CH 2: U. S. A. is part of North America and -----

Poor. CL 1: On Map X it shows a picture of North America. On map Y there is also a picture of North America.

II 5. Draw a conclusion. North America is shown on map Y. Part of North America is shown on map X. Therefore North America is shown on both maps.

Good. CH 7: Map X has a little bit of North America. Map Y has North America itself. They both can be called continent of North America.

Poor. CL 10: A bit of North America is on here.

11) I 1. Define the problem. Are number 3 on Map X and number 7 on map Y in the same state, in different states, in different countries, or in different continents?

Good. EH 13: The countries are the same and number 3 is about in the same zone as number 7.

Poor. CH 3: United States is shown on both maps.

I 5. Interprets a map. Number 3 is in the south eastern United

States and number 7 is in the western United States.

Good. EH 9: On Map X, 3 is in the U. S. and 7 is in the U. S. too ---- I----

Poor. CL 4: Think it should be C (same state) because both are in the same place.

II 5. Draws a conclusion. Number 3 is in a state in the south east. Number 7 is in the west. Going from number 3 to number 7 is going from state to state.

Good. CH 6: On map Y number 7 looks like it is in north west U. S. Number 3 would be south east. All in U. S. A.--so it would be one state to another.

Poor. CL 1: A (country to country) because they are both on the same continent.

12) I 1. Define the problem. Tell what is carried over the route from 4 to 6 on map X.

Good. EH 8: Think that looks like it is around cattle country so think number E (Cattle on the way to stockyards).

Poor. CL 11: G (sugar cane) I think you could take a plane and go across there.

I 2. Key words. Iron ore is refined in the steel mills.

Good. CH 6: Quite a bit of metal and factories. That would be where the iron ore would be on the way to the steel mills.

Poor. CL 8: I think down by the Great Lakes there would be iron ore.

I 5. Interprets a map. Numbers 4 and 6 are near the Great Lakes waterways.

Good. CL 5: They have steel mills on the Great Lakes and the ore would be coming in.

Poor. CL 1: I guessed because it was near the equator and I put oranges.

II 4. Uses outside information. Iron ore is found at number 4. There are steel mills at number 6.

Good. CH 2: Part 4 is a great mining area and it is moved to a great manufacturing area at 6 ---.

Poor. CH 3: E (cattle) In hay and dairy belt of the U. S.

II 5. Draw a conclusion. Iron ore is found at number 4. Steel mills are at number 6. The route from number 4 to number 6 is the route of iron ore to the steel mills.

Good. CH 8: I think it would be iron ore on the way to steel mills because the iron ore goes by the way of the Great Lakes to the refineries.

Poor. CH 7: I don't know--I believe it's H-----iron ores on the way to the steel mills.

13) I 1. Define the problem. Pick out the sentence that explains why there isn't much steel manufactured in Switzerland.

Good. EH 9: Connie explains that there aren't many minerals in Switzerland.

Poor. CL 8: A (Mary's) It tells what kind of country it was and I knew a little about it. We took it in Grade III.

II 3. Selects relevant data. There is very little coal and iron in Switzerland.

Good. EH 13: Connie says there is very little coal and iron in Switzerland.

Poor. CL 1: They tell us that little steel is shipped from there.

II 4. Use outside information. Steel is manufactured from iron ore.

Good. EH 1: Connie says ---- and coal and iron are needed in the manufacture of steel.

Poor. CL 5: B (Connie's) That shows if there is no coal you can't produce steel.

II 5. Draws a conclusion. There is little iron ore. Steel is manufactured from iron ore. Therefore there is very little steel manufactured.

Good. CH 8: Connie's is the best because iron is refined into steel and with very little iron there would be little steel.

Poor. CL 4: B (Connie) Because very little coal and iron are produced.

14) I 1. Define the problem. What does Diane's sentence tell about the government of Switzerland.

Good. EH 8: I think democracy means a form of an easy life.

Poor. CL 11: I think Diane liked the U. S.

I 2. Key words. Democratic means a way of living or of governing in which the people have considerable freedom of choice.

Good. CH 1: E (alike in some ways) Almost the same and laws --- they allow people to vote and express their own opinions. It is a people's government.

Poor. CL 1: F (entirely different) They tell us in Diane's sentence that it has a democratic form of government--that means it wouldn't be the same.

I 3. Translate difficult material. A democratic government is the kind that is elected by the people (like ours).

Good. CH 14: She says it's a democratic form of government and I thought that meant it was the same kind as here.

Poor. CH 8: A democratic government may be entirely different from other countries.

II 2. Recognizes the limits of the data. (The student must show that he realizes that Switzerland's government is not fully described here.

Good. CH 4: Switzerland has a government in some ways like the United States.

Poor. CH 13: I think that it might be entirely different from any other country.

II 4. Uses outside information. The United States government is democratic.

Good. EH 3: The U. S. is a people's government.

Poor. CH 9: Switzerland has a democratic form of government. I don't know if the states has or not.

II 5. Draws a conclusion. Switzerland's government is democratic. The United States government is democratic. Therefore they are alike in some ways.

Good. CH 2: G (alike in some ways) Switzerland has a democratic form of government and the U. S. has a democratic form of government too.

Poor. EL 3: They don't know whether it's the same as in the U. S. or different.

15) I 1. Define the problem. Whose sentence shows that Switzerland may have a good supply of electricity?

Good. EH 8: I don't think any of the boys and girls sentences has anything to do with electricity.

Poor. EL 7: Farms are small and can't afford electricity.

I 3. Translates difficult material. Electricity is an energy that usually comes from running water.

Good. EH 13: Streams make electricity.

Poor. CL 8: It told a lot about the steep slopes and usually they need electricity badly.

II 3. Selects relevant data. Switzerland has snow covered mountains and steep slopes and streams.

Good. CH 2: Snow-covered mountains and steep slopes and streams cause the water to run faster and it would supply electricity.

Poor. CL 11: I think Diane said Switzerland had some electricity.

II 5. Draws a conclusion. Electricity comes from running water. Switzerland has streams. Mary's sentence shows that Switzerland has a good supply of electricity.

Good. EH 9: Most electricity is supplied by streams that go down steep slopes. She says that they have quite a few. --- probably electric power plants.

Poor. CL 1: Electricity is produced by water.

16) I 1. Define the problem. Whose sentence is least susceptible to proof or disproof?

Good. CH 2: It would be hard to tell whether Switzerland makes the

best watches ---

Poor. CL 5: F (John's sentence -- small farms) To prove it you'd have to go across the ocean to Switzerland --

II 3. Selects relevant data. Tom says Switzerland makes the best watches in the world.

Good. EH 8: I said Tom because it would be hard to prove which country makes better watches than Switzerland.

Poor. EL 6: E (Mary's sentence -- mountains, streams) Because you couldn't prove there was the things she said in Switzerland.

II 4. Uses outside information. United States or Germany and other countries make good watches.

Good. CH 1: Some other countries would say that they make the best quality watches ----

Poor. CL 8: Switzerland is next to Norway and Finland and usually there wouldn't be any seacoast because they are so close together.

II 5. Draws a conclusion. Tom says Switzerland makes the best watches. Other countries make good watches. Tom's sentence would be the hardest to prove right or wrong.

Good. EH 9: H (Tom's sentence) Lots of other countries make good watches. It would be hard to prove Switzerland makes the best watches.

Poor. CL 6: H (Tom's sentence) Switzerland can make watches better than any other country.

18) I 1. Define the problem. Tell why many visitors come to Switzerland each year.

Good. EH 8: The hard working people of North America and other countries

of the world like to enjoy life in the mountains.

Poor. CL 5: I think that you would have iron to build machinery and coal to warm your houses.

II 3. Selects relevant data. Mary's sentence says that Switzerland has snow-covered mountains, steep slopes and streams.

Good. CH 8: In Switzerland the visitors come to see the mountains and streams.

Poor. CL 4: They want to see how it is in Switzerland.

II 4. Uses outside information. Switzerland has beautiful lakes and many tourist resorts.

Good. CH 1: Switzerland is very famous for its mountain resorts.

Poor. CL 5: They wouldn't go there for any of the reasons mentioned and you hear of lots of people going there for a holiday.

II 5. Draws a conclusion. Switzerland has beautiful scenery and opportunities for mountain sports. Switzerland has tourist resorts. Therefore people come to enjoy life in the mountains.

Good. EH 4: --- People go to Switzerland to ski in the mountains and lots of resorts there for holidays so you go to enjoy it.

Poor. CL 1: Because Switzerland is a country with many mountains and some people like mountains.

24) I 1. Defines the problem. Why is this little picture a good representation of pasture lands?

Good. EH 13: The symbol looks like grass.

Poor. EL 12: Pasture lands are good for growing grain, grass and trees.

I 4. Interprets pictorial representations. The symbol looks

like grass.

Good. EH 9: That's a good symbol --- the little marks look like shoots of grass--it's mostly grass in pastures.

Poor. CL 12: --- because it's good for wheat to grow -- the symbol.

25) I 1. Define the problem. The problem is to calculate from the chart the acres of crop land in 1940.

Good. CH 13: The chart doesn't tell.

Poor. CL 6: They grow things faster than in the other things.

I 2. Understands key words. A symbol is one of the little blocks.

Good. EH 8: Under the pictures each symbol represents 2 million acres of crop land and there are 2 symbols in 1940 so ---

Poor. CL 10: It doesn't show how many there are.

I 4. Interprets pictorial representations. There are two symbols in 1940 and each symbol represents 200 million acres.

Good. CH 8: --- each symbol represents 200 million acres and there are two symbols.

Poor. CL 4: B (200 million acres) because each one represents 200 million acres.

II 4. Uses outside information. 2 x 200 million is 400 million acres.

Good. CH 6: two symbols--multiply 2 x 200 equals 400 million acres.

Poor. EH 13: (Answer C - 400 million acres) Each symbol represents 200 million acres and there are $4\frac{1}{2}$ symbols.

26) I 1. Defines the problem. According to the chart in which year

did the United States have the most trees?

Good. EH 9: It shows in 1700 there are more tree lands than the other 2 years.

Poor. CL 6: They had the most because they used a tractor instead of horses.

I 4. Interprets pictorial representations. There are more symbols for trees in 1700 than in any of the other years.

Good. EH 8: because in 1700's there were more symbols of trees than in the other two years.

Poor. CL 8: In 1700 there was hardly any settlers there so there would be more trees.

II 3. Selects relevant data. There are four symbols or 800 million acres in 1700; 3 symbols or 600 million acres in 1879; and only $2\frac{1}{2}$ symbols or 500 million acres in 1940.

Good. CH 5: In 1700 - 4 symbols; 1879 - 3 symbols; 1940 - $3\frac{1}{2}$ symbols.

Poor. CL 5: The chart shows in 1700 there was more acres of trees.

27) I 1. Defines the problem. Why is there so much waste land (unused land) in the country?

Good. EH 8: If mankind cannot find something useful about the soil or trees in wastelands they cannot find a way to make the land profitable.

Poor. CL 6: They cannot grow crops like in other lands.

I 4. Interpret pictorial representations. The symbols on the chart show that deserts are waste land.

Good. EH 9: The waste lands are mostly sand and you can't grow good crops in sand.

Poor. CL 1: Waste land is not able to grow crops and things we can eat.

II 4. Uses outside information. Very little can be grown in deserts or other waste lands.

Good. EH 13: There are many waste lands no good for crops.

Poor. CH 13: Waste land is like desert--looks like cactus--no people like to settle there.

28) I 1. Defines the problem. What caused the change shown by the chart in the amount of forest land?

Good. EH 8: Should be E (We use wood for many things) because the uses of wood in 1940 is increasing greatly.

Poor. CL 8: Some careless hunter or Indians could leave fire open and when the forests are dry then the forests would burn.

I 2. Understands key words. In this problem cleared means that the trees were removed, and destroyed means that they were burned.

Good. CH 1: Forest lands were cleared to make room for farms and forest fires have cleared away a lot of timber land.

Poor. CL 5: E (Use wood for many things) We do use wood for many things and forests are growing smaller.

I 3. Translates difficult material. The change is to less forest land.

Good. EH 9: Each reason shows a part of the trees is destroyed by all the reasons.

Poor. CL 6: They use wood to make a lot of houses.

I 4. Interpret pictorial representation. The chart shows less trees in 1940 than in 1700.

Good. CH 13: Less forests than any other place--need crops more than trees.

Poor. CL 4: Settlers used wood to build their houses.

II 3. Selects relevant data. Wood is used for many things, lands were cleared for farms and fire destroyed some forests.

Good. CH 6: We use wood for many things and the others are all true.

Poor. CL 10: We use wood for many things and they can use the wood for buildings.

II 5. Draws a conclusion. Wood is used for many things. Forests were cleared. Fire destroyed forests. All these reasons are important.

Good. CH 8: (H) All of these reasons are important because we do use wood for many things and they were needed for farms and some of the forests have been destroyed by fire.

Poor. CH 7: It looks like they are all important. I didn't want to choose G (fires have destroyed) but I want E and F but I couldn't choose two answers.

33) I 1. Defines the problem. Which page would tell about the California Gold Rush of 1849?

Good. EH 9: The gold rush of California was in 1849.

Poor. CL 4: Should be A because people in Mexico dig for gold.

III 2. Locates information. (The student may be given credit for use of this skill if he shows that he would look for information about the gold rush under the name of the place where he believes the gold rush took place.)

Good. CL 12: A (47-48 Mexico) because it said gold in Mexico and they had a gold rush that year.

Poor. CL 11: B (Peru) I think that these pages had the most gold rush.

34) I 1. Defines the problem. Under which name would you find information about the search for gold in Mexico?

Good. EH 8: I gave answer F because Pizarro is a country of Mexico.

Poor. EL 9: E At the bottom of the place where they have gold they have these other places.

I 2. Understands key words. Cortes explored and conquered Mexico.

Good. CH 6: Should have been G---In Mexico, Cortes conquered the Aztecs.

Poor. CL 6: E (Pike) It was one of the towns in which they found gold.

II 4. Uses outside information. Cortes found gold in Mexico.

Good. CH 2: I think the main interest of Cortes was gold.

Poor. CL 8: Pizarro sailed around the land and landed on one of the coasts so he could look for gold.

II 5. Draws a conclusion: Cortes found gold in Mexico. The problem asks where you might look for information about the search for gold in Mexico. You would look under the name of Cortes.

Good. EH 5: Well Cortes had been there--I forget what year it was but he found much gold there.

Poor. CH 9: Cortes sounds like a Mexican name.

III 2. Locates information. You would look up Cortes in the index.

Good. CH 8: Cortes was the explorer who conquered Mexico so you would look under Cortes.

Poor. EL 9: At the bottom of the place where they have gold they have these other places.

35) I 1. Defines the problem. Where would you find information about gold on a continent other than North America?

Good. EH 9: Peru is not in North America. It's quite far away.

Poor. CL 8: I thought that the two countries, Colorado and Nevada were in Canada.

I 2. Understands key words. Peru is a country in South America.

Good. EH 8: Because Peru is in South America and not in North America.

Poor. CH 9: Peru is not in North America.

II 4. Uses outside information. The Incas had gold in Peru or there are gold mines in Peru.

Good. CH 4: It says gold in Peru would be on pages 52 and 53 and that's in a different continent and there is gold in Peru.

Poor. CL 10: Could it have been D -- there were a few gold mines in these cities. Not sure of pronunciation of first (Nevada) next is Colorado.

II 5. Draws a conclusion. Peru is in South America not in North America. Therefore you would look under Peru.

Good. EH 5: Well, it says in Peru 52-53 and Peru isn't in North America; it's in South America.

Poor. EL 8: Peru is in South America.

III 2. Locates information. (The student may be given credit for

use of this skill if he shows that he would look for information under the name of the place that he believes is not in North America.)

Good. CH 8: You would look on pages 52 and 53 because Peru is not in North America and they said other than North America.

Poor. CL 6: D (Colorado and Nevada) It was one of the richest mining places.

B Social Studies Problems with Guiding Questions

There were two social studies problems with guiding questions. In the final interviews the research and reporting topic was based on the enterprise topic, Cuba. The problem adapted from the Wrightstone Test of Critical Thinking contained a paragraph entitled, Cities of the United States, followed by five questions.

Cuba

I 1. Define the problem. Where would I find information about my topic?

Good. EH 13: Information in books about Cuba.

Poor. CL 12: Visit Cuba.

II 4. Uses outside information. (Here the pupil must name some books or geographies that would be useful.)

Good. EH 8: ---- geography books, Lands and Peoples book.

Poor. CL 4: In books at the school library.

III 1. Use the library. (The pupil may receive three points: one point for mentioning encyclopedia, geographies or atlases; one point for mentioning useful books; and one point for mentioning pamphlets, pictures, travel bureau folders, magazines, resource persons, or educational films.

Good. EH 12: In books -- Cuban history books, encyclopedia and also films. At the travel bureau you'd find more. (3 points)

EH 8: I would find the information in the encyclopedia, and books on Cuba --- geography books, Lands and Peoples book. (2 points)

EH 9: In the school library--in the public library. You might get travel folders. (1 point)

Poor: CL 10: You could get books from the library and from the school library if they have one. (0 points)

b) I 1. Defines the problem. How would I find the information in the books?

Good. CH 13: Keep going through the pages -- try to find something.

Poor. CL 5: I would read the books. I found and collect the information.

III 2. Locate information in a book. (The pupil may receive three points: one for mentioning the index, one for mentioning the table of contents, and one for indicating skimming.)

Good. CH 13: ---- books mostly and pamphlets --- keep going through pages and try and find something. (1 point)

EH 8: Look in the index to find what pages the information would be on and the table of content. (2 points)

EH 13: I would look in index, collect information. (1 point)

Poor. CL 11: I would read the books. (0 points)

c) I 1. Defines the problem. How would I select useful information and write a report?

Good. EH 11: When I find Cuba I would read. I'd put it down on paper.

Poor. CH 14: Don't know. Would write in a notebook and keep it in order. Ask teacher if I could read some of it.

I 3. Translates difficult material. I would write the material in my own words.

Good. EH 6: I would take information out of the books and put it in easier words.

Poor. CL 4: Read the books. I would put down how they dressed, their food and what they do.

II 1. Arrange ideas in sequence. I would organize material from more than one source.

Good. EH 4: I'd write it on scratch paper first, then, in the order in came. (EH 4 indicated that he would choose several books about Cuba and the encyclopedia.)

Poor. CL 8: Look up Cuba. Read it. Then write down notes. (This pupil's sources were the encyclopedia and visit Cuba.)

II 3. Selects relevant data. (The pupil may receive three points: one for indicating that he would read quickly, to get the general idea; one for indicating that he would re-read carefully, and one for indicating that he would make notes.)

Good. EH 2: Read it, write the information down and if there were any unnecessary parts I'd leave that out. I'd get as much information as I could and when I thought I had as much as I could get, I'd read it over and pick out the best parts and write them down. (3 points)

EH 1: Read and study. Write it out in your own words. (2 points)

EH 13: I would look in the index, collect information and organize it into a report. (1 point)

Poor. CL 1: I write about what I read. (0 points)

d) I 1. Defines the problem. How would I report to the class?

Good. EH 6: I would give it orally.

Poor. CL 14: Let someone else use the book with you.

II 1. Arranges ideas in sequence. I would make a blackboard outline

or an outline of notes to help me.

Good. EH 8: Give my report, then write down a good outline on the blackboard for the class to write stories in their notebooks.

Poor. CL 9: Write report. Read to the class. Share the books with the class.

III 3. Prepares a report to a larger group. (The pupil may receive two points: one for indicating that he would plan to tell the report, and one for saying that he would have pictures or charts to show too.)

Good. EH 3: I would try to tell it after trying to remember the report. I'd show the chart and try to explain it. (2 points)

EH 4: I might memorize it or tell it to the class. (1 point)

Poor. CL 8: Read it to them. Tell them where you got it from. (0 points)

Cities of the United States

1) I 1. Define the problem. Do the large cities in the United States have good harbours and railroad lines?

Good. EH 11: Yes the largest cities in the U. S. A. have good harbours and railroad lines ----

Poor. CL 14: Yes, the first paragraph.

I 2. Understands key words. Meet means that two or more come together.

Good. EH 8: ---- others are where rivers and railway lines meet.

Poor. CL 7: Yes, many of them have good harbours and ports for ship.

II 3. Selects relevant data. Many of them have good harbours and ports for ships. Others are where rivers or railroad lines meet.

Good. EH 7: Yes, many of them have good harbours and ports for ships.

Others are where railroad lines meet.

Poor. CL 10: I'd say they do. Pittsburgh is a place where railroad lines meet. These are some of the important cities in the United States.

2) I 1. Defines the problem. Would land or lots in these cities be worth much money?

Good. EH 5: Yes, lots of people come to the city because they want jobs, and businessmen make more money if they charge more money for their land.

Poor. CL 2: Yes, because if they didn't have land for the city to grow on the city would become less populous all the time--or popular--it doesn't matter.

I 2. Understands key words. The term cost means "sells for".

Good. EH 6: Yes --- and it's natural land would cost more.

Poor. EL 7: The land is very valuable but I don't know why.

II 3. Selects relevant data. Land and buildings in such cities cost much more than farm land and buildings of the same size.

Good. EH 11: Yes --- It says that land and buildings in cities cost much more than farm land.

Poor. CL 1: Yes. Nothing tells me--I just think so.

3) I 1. Defines the problem. Do all the large cities in the United States have good harbours or ports?

Good. EH 11: Yes, all the large cities have good harbours or ports.

Poor. CL 11: Yes, because I think that everyone could build harbours and ship goods.

II 2. Recognizes the limits of the data. Others are where rivers or

railroad lines meet.

Good. EH 4: No, they don't. It says others have railroad lines. Many have but it doesn't mean all or others that have not harbours.

Poor. CL 5: Yes, it says in the paragraph that all large cities have good harbours.

II 3. Selects relevant data. Others are where rivers or railroad lines meet.

Good. CH 8: No because it says many have good harbours. It also says others are where rivers and railroad lines meet.

Poor: CL 6: Some of them have harbours and the others have railroad lines.

II 4. Uses outside information. (The student must mention cities such as Denver or tell where there are U. S. cities that do not have good harbours.)

Good. EH 3: No--Because the cities which are on the prairie cannot very well have harbours but they can have railroad lines.

Poor. CH 11: Is Montana in the U. S. A.? -- not a city -- guess -- New York's only city I know -- big arena -- T. V. boxing.

II 5. Draws a conclusion. The paragraph does not say that all large American cities have ports. It says some are where railroads and rivers meet. I know there are some that do not have ports. Therefore all large United States cities do not have ports.

Good. CH 2: No. Denver, Colorado does not have a port or harbours but it is an important city because railroad lines meet there.

Poor. CL 2: No, because it says in the paragraph some of the cities

have railroads where meet or where two rivers join -- there usually a large city or sometimes

4) I 1. Defines the problem. Are the cities at seaports or where rivers or railways meet usually small?

Good. EH 8: No, they are not usually small.

Poor. CL 11: Yes, because one time I saw a bunch of them on a plane and I thought they were small.

I 2. Understands key words. Harbours or ports are likely to be seaports.

Good. EH 3: No, they are not because with a harbour ships with exported from other countries can come to your city.

Poor. CL 1: No, Pittsburgh, Pennsylvania is at the place where two rivers join and where many railroads meet.

II 3. Selects relevant data. Several large cities are mentioned. It says they have good harbours and ports for ships, or are situated where rivers or railroads meet.

Good. CH 1: No, because it talks about Pittsburgh and New Orleans and other seaports and cities that are at rivers and railroad centres ----

Poor. CL 3: No, there is some big ones.

II 5. Draws a conclusion. Many large cities are at seaports. Other large cities are where rivers or railroad lines meet. These cities at seaports, or rail centres, or river junctions are likely to be large.

Good. CH 8: No. It says that cities at seaports, rivers, and railroad centres are usually large.

Poor. CL 2: No they are not. If they were small cities they wouldn't

have seaports. They wouldn't be too important for the main industries which other countries trade.

5) I 1. Defines the problem. What in the paragraph explains why Chicago became a large city?

Good. EH 1: Doesn't give any reasons. My reason would be warships going on the Great Lakes and Chicago would be a loading and unloading station.

Poor. CL 13: No, people go there to live and they build houses and apartments.

I 2. Understands key words. Shores means the edge.

Good. EH 7: --- it does say it is on the shores of Lake Michigan. Being on the lake there would probably be lots of tourists.

Poor. CL 6: Yes, Chicago is one of the shores of Lake Michigan. It is important for other things like other cities and towns.

I 3. Translates difficult material. The phrase shores of Lake Michigan indicates that Chicago is a port.

Good. EH 4: It says it's on the shore of one of the Great Lakes where wheat and other things are shipped.

Poor. CL 9: Chicago is on the shores of Lake Michigan. Chicago--most actresses do their business there.

C Problem of the Social Studies Type without Guiding Questions

In the final interviews this problem was entitled a Fishing Accident.

I 1. Define the problem. How will I help Jean?

Good. EH 7: Most lakes have a lifeguard -- I think he would be able to work her foot out.

Poor. CL 12: I would scream for help and if nobody would come I would try to get out --- My leg would turn black and blue.

II 2. Recognizes limits of the data. (The pupil may receive three points: one for indicating that Jean's foot may not be hurt; one for indicating that he needs help to get Jean's foot out; and one for indicating that the nearest help is a quarter of a mile away.)

Good. EH 8: --- I would send Harold to fetch Mother and Father. Meanwhile I would try to comfort Jean. If her foot became numb I would press her foot gently -- (3 points)

EH 3: --- get her foot out. If I couldn't -- Then I would send my brother to get my Father and Mother as they are only 3 blocks away. (2 points)

EH 9: I ----- I would call to them for help -- I would send Harold to a cottage -- I would be afraid that her leg might fall in too. (1 point)

Poor. EL 14: I would get a thick stick and get her foot out of the planks. --- She would have a broken foot! (0 points)

II 3. Selects relevant data. (The pupil may receive two points: one for realizing that Father and Mother and neighbours are a quarter of a mile away; and one for recognizing that Harold will get help or stay

with Jean.

Good. EH 12: -- and send Harold to get Mom and Dad -- Then I would stay with her till Mom and Dad came. (2 points)

EH 1: I would tell Harold to go for help while I go and get a board -- (1 point)

Poor. CL 13: I would get help. I think it awful. She would keep crying. (0 points)

II 4. Uses outside information. Some things can be done to help Jean, to keep her comfortable, and to keep her from struggling.

Good. EH 12: Meanwhile Jean was beginning to cry all the more so I got my scarf, dunked it in the cool water and rubbed it.

Poor. CL 3: Tell her not to pull on it.

II 5. Draws a conclusion. Harold and I are with Jean. One of us will comfort her while the other runs for help. Father and Mother will come to get Jean out.

Good. EH 5: -- I would tell Harold to go to the cottage, get Mom and Dad and tell them to come quickly. I would tell Jean to sit still --- I think Mom and Dad would come and pry the boards apart.

Poor. CL 2: I would look for a hammer and a strong pole ---- I would expect the boards would open and her toe would get free.

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